

**ORDER NO. KM40303053C1**

**F1**

# Service Manual

**Telephone Equipment**

**KX-TS3282B**

**Integrated Telephone System**

**Black Version**

**(for U.S.A.)**

Caller ID Compatible

INTERCOM

2 LINE



## **SPECIFICATIONS**

## ■ SPECIFICATION

Power Source:	AC adaptor (120 V AC, 60 Hz) Three "AA" size Manganese (R6, UM-3) batteries
Power Consumption:	Standby: Approx. 1 W Maximum: Approx. 1.5 W
Memory Capacity:	50 directory memory, M1~M3 for each station
Dial Speed:	Tone (DTMF)/Pulse (10 pps)
Redial:	The unit redials the last 10 dialed numbers
Pause:	Unit, 6.5 cm (2.5") PM magnetic type
Speaker:	Receiver unit, 32Ω Handset; 3 cm (1 <sup>3</sup> / <sub>16</sub> ") PM
Microphone:	Electric condenser microphone
Input Jacks:	Telephone line (L1/L2, L2, DC IN)
Operating Environment:	5°C - 40 °C (41 °F - 104 °F)
Dimensions:	7 <sup>5</sup> / <sub>16</sub> " × 9 <sup>1</sup> / <sub>16</sub> " × 3 <sup>25</sup> / <sub>32</sub> " [186 (W) × 231 (D) × 96 (H) mm]
Weight:	1.96 lbs. (890 g) [with the Handset]

Design and specifications are subject to change without notice.

# Panasonic

## 1. FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When repairing, the following precautions will help prevent recurring malfunctions.

1. Cover the plastic parts boxes with aluminum foil.
2. Ground the soldering irons.

3. Use a conductive mat on the worktable.
4. Do not touch IC or LSI pins with bare fingers.

## 2. CAUTION

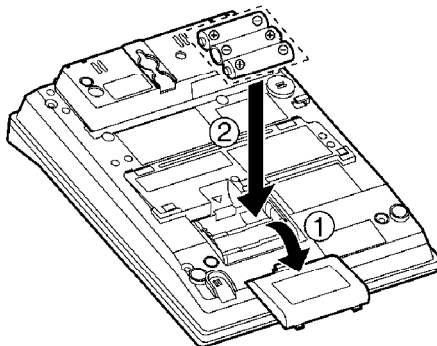
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacture's Instructions.

## 3. Battery

### 3.1. Installing the Batteries

Install the three included batteries in the battery compartment. They work as emergency power during a power failure. The unit will work as a standard telephone, so that you can make or answer external calls with the handset. (You cannot use the intercom.)



- 1 Press down in the direction of the arrow and remove the cover.
- 2 Install the batteries in the proper order as shown, matching the correct polarity.
- 3 Close the battery cover.

- You can also install three "AA" size Alkaline (LR6) batteries.
- The battery operating time may depend on usage conditions and ambient temperature.
- The battery operating time during a power failure is about three weeks for the three included "AA" size Manganese (R6, UM-3) batteries. The battery operating time will be longer for three "AA" size Alkaline (LR6) batteries.
- During a power failure the batteries will retain the clock memory and the redial memory. If you do not install the batteries in a power failure, those memory will be erased.

#### Battery replacement

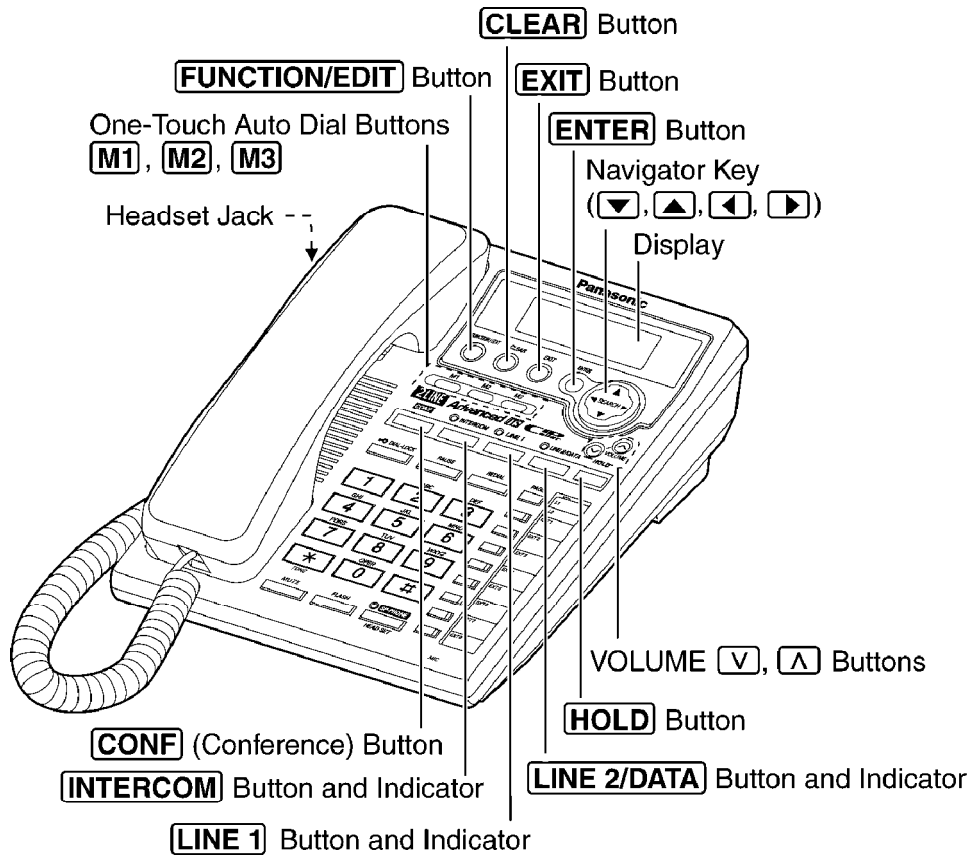
If "□" flashes, the battery power is low. Replace the batteries with new ones. Disconnect the telephone line cord(s) before opening the battery cover.

- You do not need to disconnect the AC adaptor, otherwise the clock memory and the redial memory will be erased. If "⊖" flashes on the display, adjust the clock.

**Note: for Service**

Replace all three batteries if “” flashes.

## **4. LOCATION OF CONTROLS**







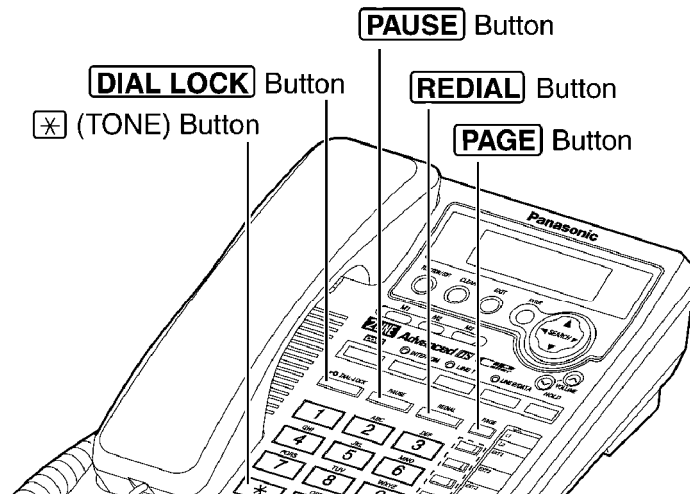
### How to use the Navigator key

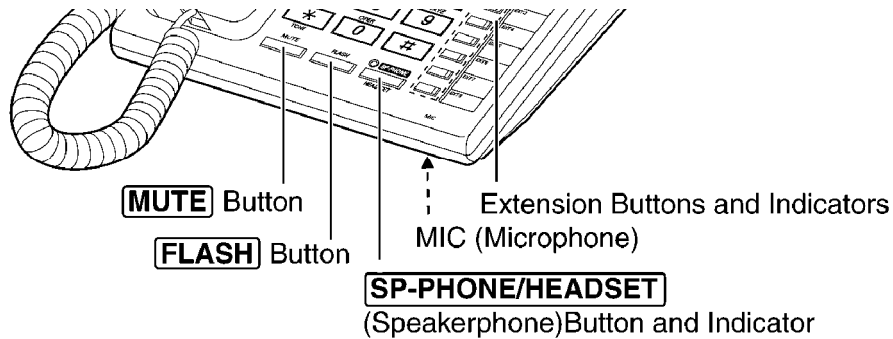
This key has four active areas that are indicated by arrows.



- Pressing the up and down arrows allows you to enter the Caller List and scroll through the Caller List, the directory list and the function menu.
- Pressing the right and left arrows allows you to enter the Directory list and move the cursor when entering items.
- The right arrow is used to select your menu choices.

Throughout these Service Manual, the navigator key is indicated by the arrows , ,  or .





## 5. Display

```
1234567890123456
ABCDEFGHIJKLMNPO
abcdefghijklmnp
-○ ☒ Ⓜ ● □
```

(This display shows all of the possible configurations.)

```
12:34AM 5/21[1]
10 new calls
```

When the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off, the display shows the current time and date, the extension number, and the number of new calls if you subscribed to a Caller ID service.

```
12:00 1/1[1]
>Ⓜ
```

If "Ⓜ" flashes on the display, the clock needs adjusting.

```
12:34AM 5/21[1]
01-06-35
```

During a conversation, the display shows the length of the call (ex. 1 hour, 6 minutes and 35 seconds).

```
SMITH, JACK 1
1-222-333-4444
11:20AM 1/10 x3
```

This is a display from the Caller List. The display shows:

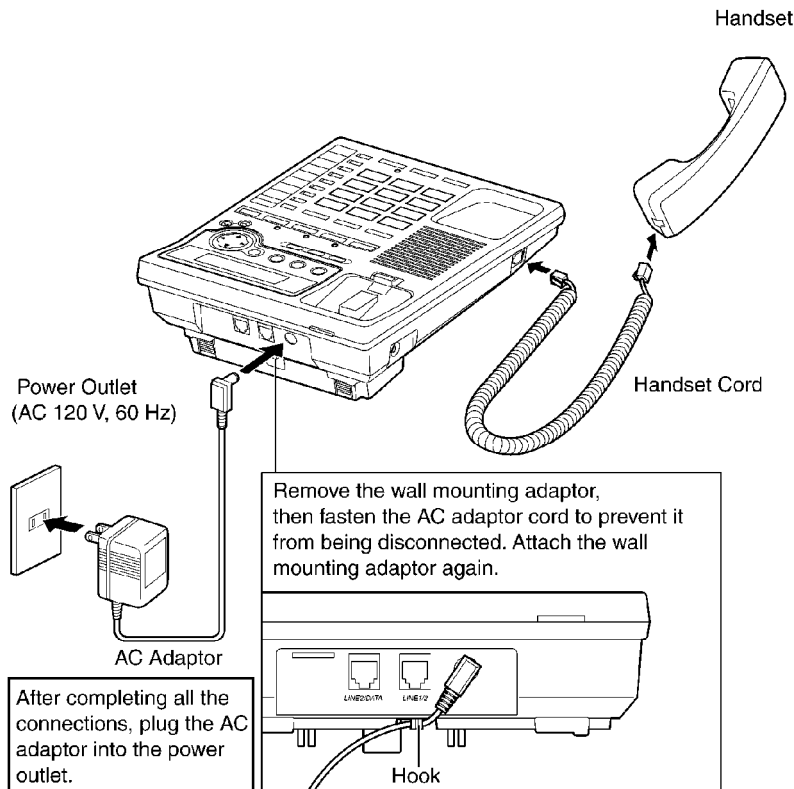
- the caller's name,
- the called line,
- the caller's number,
- the time and date of the last call (ex. Jan. 10, 11:20 AM), and
- the number of times called (ex. 3 times).

- : The dial lock mode is set.
- ☒ : **MUTE** was pressed during a conversation.
- Ⓜ : Displays when storing or viewing the directory items.
- : Displays while viewing the redial list.
- : The battery power is low or the batteries have not been installed.
- P : **PAUSE** was pressed while dialing or storing phone numbers.
- F : **FLASH** was pressed while storing phone numbers.

## 6. SETTINGS

### 6.1. Connections

#### 6.1.1. Connecting the Handset and AC Adaptor



- USE ONLY WITH Panasonic AC ADAPTOR KX-TCA1-G.
- Use only a Panasonic Handset for the KX-TS3282B.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- After you connect the AC adaptor;
  - the display shows "Set clock" for 60 seconds, and
  - all of the extension indicators flash until you assign the extension number of your unit.

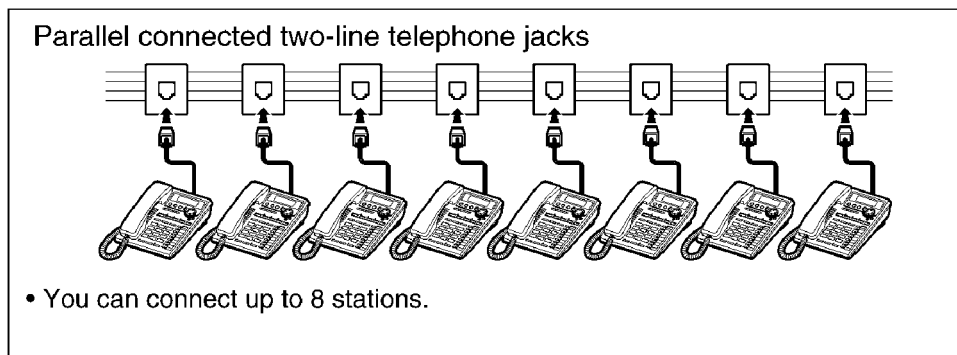
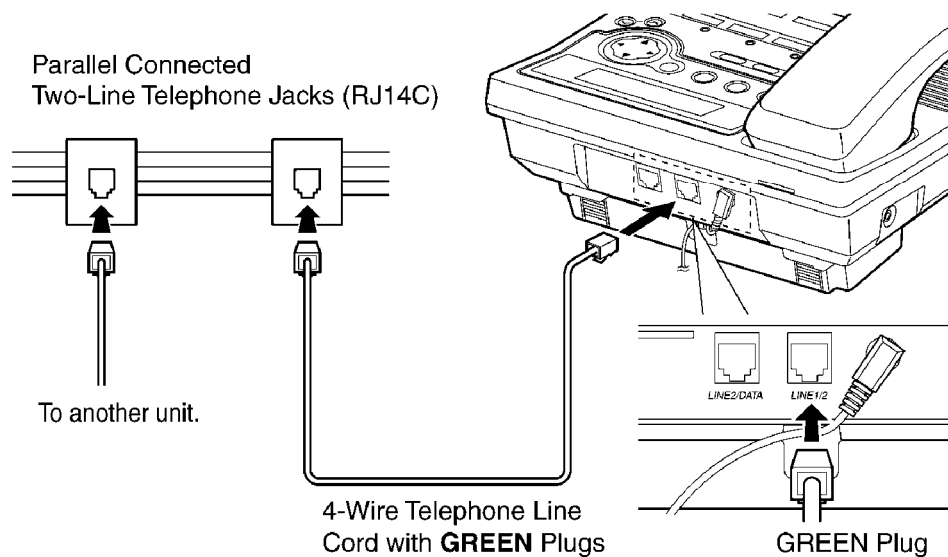
During a power failure, the batteries serve as the power source. The unit will work as a standard telephone. You can make or answer an external call with the handset. (You cannot use the intercom.)

### 6.1.2. Connecting Telephone Line Cords

A maximum of eight KX-TS3282Bs can be connected in parallel. You can also connect KX-T3281W.

To use the intercom, you must connect the telephone line cord to the LINE1/2 telephone jack of the unit.

## To connect the units to individual two-line telephone jacks

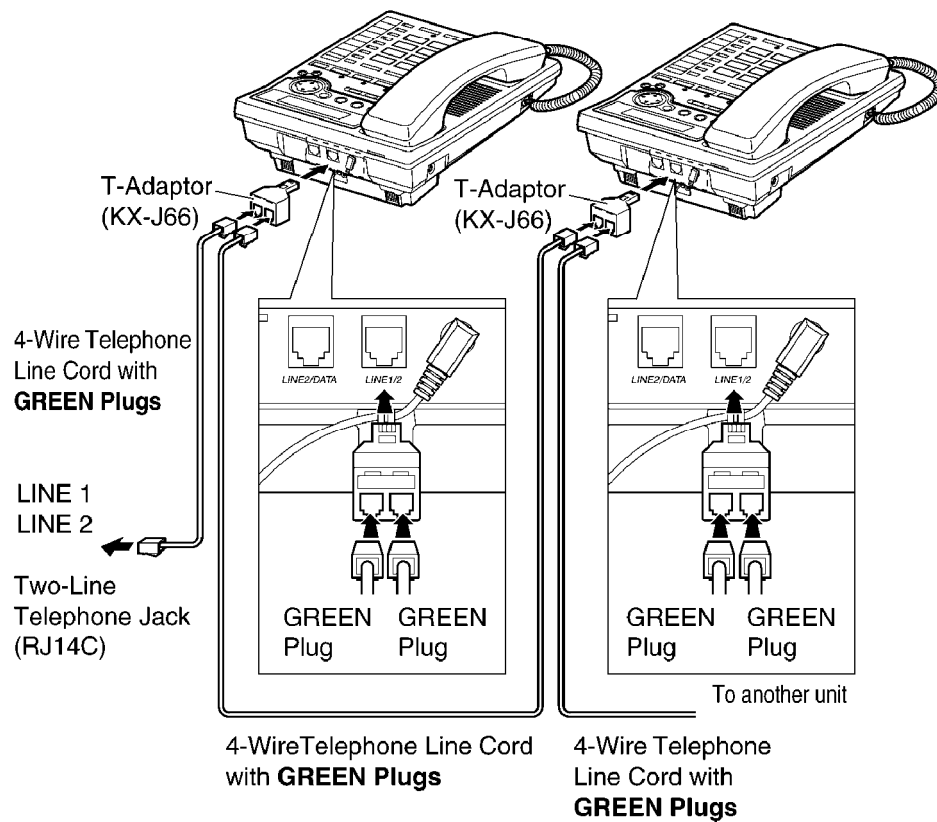


- If another model telephone is connected to the KX-TS3282B except for KX-TS3281W, the line indicators of this unit will not function for that telephone.
- If you re-connect the telephone line cord(s), confirm that all of the extension indicators light with the AC adaptor connected, then connect the telephone line cord(s). If all of the extension indicators do not flash, the extension number has been assigned to this unit and the number might be used for another unit on the same line. Erase the previously assigned number, then connect the telephone line cord(s). Re-assign the number to the unit.

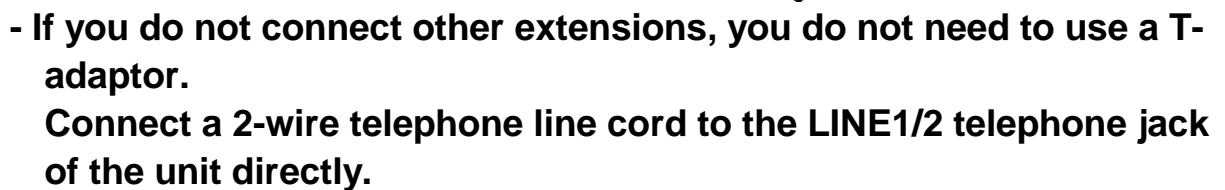


## To connect the units to a two-line telephone jack

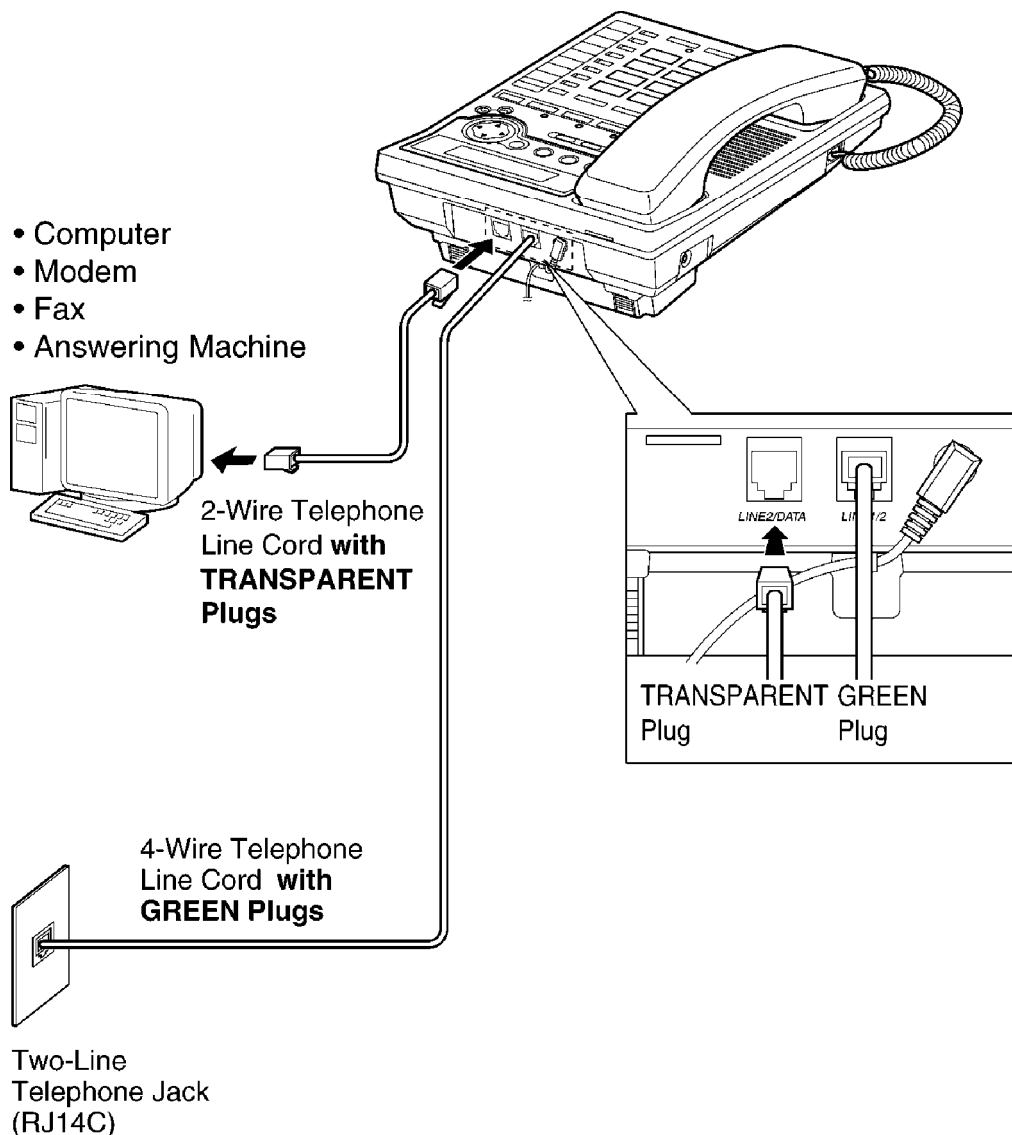
If you provide only one two-line telephone jack for the units, continue to wire them using optional Panasonic T-adaptors KX-J66.



If you provide only two single-line telephone jacks for the units, continue to wire them using optional Panasonic T-adaptors KX-J66.



**After connecting the telephone line cord to a two-line telephone jack, you can connect a communication device (computer, modem, fax, answering machine, etc.) through this unit using the LINE2/DATA jack.**



- If the communication device is in use, use **LINE 1** to make or answer other calls.  
Otherwise the communication device may not operate properly.

## 6.2. Dialing Mode

If you have touch tone service, set to Tone. If rotary or pulse service is used, set to Pulse. Your phone comes from the factory set to Tone.

Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.

1 Press **FUNCTION/EDIT** .

```
-----  
► Save M1,M2,M3  
Save directory
```

2 Scroll to "Dial setting" by pressing ▼ or ▲.

```
Change password  
► Dial setting  
Line setting
```

3 Press ►.

```
-----  
► Set dial mode  
Set flash time
```

4 Press ► at "Set dial mode".  
• The current setting is displayed.

```
Dial mode  
▼▲ :Tone  
ENTER=Save
```

5 Select "Pulse" or "Tone" by pressing ▼ or ▲.

6 press **ENTER** (Save key).

- A beep sounds.
- To exit the programming mode, press **EXIT** .

• You can exit the programming mode any time by pressing **EXIT** .

### 6.3. Dial Lock

Except for the numbers stored in the one-touch auto dial buttons, you can prevent others from making a call to any number. Only incoming calls are accepted until the dial lock is canceled.

Before using this feature, we recommend storing emergency numbers in the memory of one-touch auto dial buttons. Even if the dialing buttons are locked, the numbers stored in these buttons can be dialed.

### To set the dial lock

- 1 Press **DIAL LOCK**.
  - "☎" flashes on the display.

```
Enter password
:----
ENTER=Save
☎
```

- 2 Enter the password.

```
Enter password
:0000
ENTER=Save
☎
```

- 3 Press **ENTER** (Save key).
  - A beep sounds and "☎" stops flashing and remains on the display.
  - If 3 beeps are heard, you entered a wrong password. Enter the correct one.

- You can exit the programming mode any time by pressing **EXIT**.

"☎" is displayed when the mode is on.  
If the dial buttons are pressed after lifting the handset or pressing **SP-PHONE/HEADSET** or a line button "DIAL LOCKED" will be displayed for a few seconds.

- While the dialing buttons are locked, you cannot store phone numbers in the memory of one-touch auto dial buttons.

### To cancel the dial lock

Follow steps 1 to 3 above.

- "☎" will disappear on the display.

## 6.4. How to Release the Establishment of Dial Lock

- 1 Press **FUNCTION/EDIT**.
- 2 Press **▼**.
- 3 Press **▼**.
- 4 Press **▼**.
- 5 Press **▼**.
- 6 Press **▶**.
- 7 Enter "726276642" (Panasonic) for initializing of password.
- 8 Press **▼**.
- 9 Enter a new password 4 digits code by dial key pad (Ex."1234"). If you want to set the password for "DIAL LOCK" to "1111" (factory set), you should enter "1111".
- 10 Press ENTER.  
After this procedure, the password for "DIAL LOCK" will be returned to "1234".
- 11 Press **EXIT**.
- 12 To cancel the Dial Lock, follow "To Cancel the Dial Lock" in **4.3. Dial Lock**.

```

-----
▶ Save M1,M2,M3
  Save directory

```

```

Save M1,M2,M3
▶ Save directory
  LCD contrast

```

```

Save directory
▶ LCD contrast
  Ringer setting

```

```

LCD contrast
▶ Ringer setting
  Change password

```

```

Ringer setting
▶ Change password
  Dial setting

```

```

Current password
      :----
      ▼=Next

```

```

Current password
      :----
      ▼=Next

```

```

Enter password
      :----
      ENTER=Save

```

```

Enter password
      :1234
      ENTER=Save

```

```

Enter password
      :1234

```

## 6.5. Call Restriction

You can prevent the unit from dialing phone numbers beginning with specified digit(s) (1 digit or 2 digits). Except for the numbers stored in the memory of one-touch auto dial buttons, phone numbers with the restricted leading digits cannot be dialed out.



Before using this feature, we recommend storing emergency numbers in the memory of one-touch auto dial buttons. Even if the phone numbers are restricted, the numbers stored in these buttons can be dialed.

## To set the call restriction

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

**1** Press **FUNCTION/EDIT**.



```
-----
▶Save M1,M2,M3
Save directory
```

**2** Scroll to "Dial setting" by pressing  or .

```
Change password
▶Dial setting
Line setting
```

**3** Press .


```
-----
▶Set dial mode
Set flash time
```

**4** Scroll to "Call restrict" by pressing  or .

```
Set flash time
▶Call restrict
-----
```

**5** Press .

```
Restrict no.
:--
ENTER=Save
```

**If you changed the password from "1111" (factory preset) to another one, "Enter password" is displayed.** Enter the password, and press  (Next key).

```
Enter password
:----
▼=Next
```

- If 3 beeps are heard, you entered a wrong password. Enter the correct one.

```
Enter password
:oooo
▼=Next
```

**6** Enter the first number(s) (1 digit or 2 digits) you want to restrict (**0** to **9**).

- If you enter a wrong number, press **CLEAR** and enter the correct one.

Ex. "9" is entered.

```
Restrict no.
:-9
ENTER=Save
```

**7** Press **ENTER** (Save key).

- A beep sounds.
- To exit the programming mode, press **EXIT**.

- You can exit the programming mode any time by pressing **EXIT**.
- While you restrict phone numbers beginning with specified digit(s), you cannot store phone numbers in the memory of one-touch auto dial buttons.

When dialing a phone number with the restricted leading digit(s), "CALL RESTRICTED" is displayed.

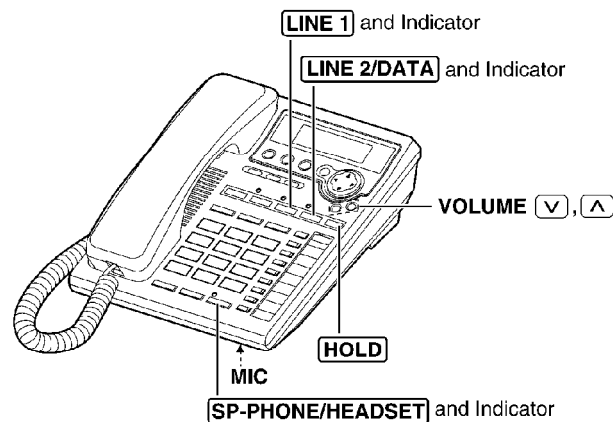
### To cancel the call restriction

Repeat steps 1 to 5. Then press **CLEAR** to clear the restricted digits, and press **ENTER** (Save key).

## 7. OPERATIONS

### 7.1. Making Calls

The unit will automatically select a free line when you lift the handset to make a call. To hang up, place the handset on the cradle.



#### Using the speakerphone

- 1** Press **SP-PHONE/HEADSET**.
  - The SP-PHONE/HEADSET indicator lights.
  - A free line is automatically selected and the line indicator lights.

12:34PM 11/24 [1]  
00-00-00
- 2** Dial a phone number.
  - The dialed number is displayed.
  - After a few seconds, the display will show the length of the call.
  - If you misdial, press **SP-PHONE/HEADSET** and start again from step 1.

12:34PM 11/24 [1]  
1234567890


12:34PM 11/24 [1]  
00-00-12
- 3** When the other party answers, talk into the **MIC** (microphone).
 

12:35PM 11/24 [1]  
00-01-10
- 4** To hang up, press **SP-PHONE/HEADSET**.
  - The SP-PHONE/HEADSET and the line indicator lights go out.
  - The length of the call will remain on the display for a few seconds.
  - In step 1, you can select a line by pressing a line button whose indicator is not lit, instead of pressing **SP-PHONE/HEADSET**.





### During speakerphone operation

For best performance, please note the following:

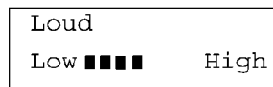
- Talk alternately with the other party in a quiet room.
- If the other party has difficulty hearing you, press **VOLUME**  to decrease the speaker volume.
- You can switch to the handset by lifting it up. To switch back to the speakerphone, press **SP-PHONE/HEADSET**. You can place the handset on the cradle.

### To adjust the handset volume (4 levels) or the speaker volume (8 levels) while talking

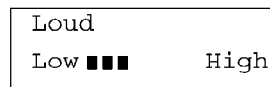
To increase, press **VOLUME** . To decrease, press **VOLUME** .

Ex. Handset volume level: 2

Ex. Speaker volume level: 3



"■■■■" shows one level.



"■■■" shows one level.

- The display shows the volume level for a few seconds.

### To redial the last number dialed

Lift the handset, and press **SP-PHONE/HEADSET** or a line button, and press **REDIAL**.

### To redial using the redial list (Memory Redial)

The last 10 phone numbers dialed are stored in the redial list.



1. Press **REDIAL**.

- The last dialed number and "●" are displayed.

234-5678



- When the number dialed has been stored in the directory or One-Touch Dialer, the name is also displayed.

2. Scroll to the desired number by pressing  or .

- You can also scroll down through the list by pressing **REDIAL**.
- When you scroll to the most recent item, two short beeps sound.
- To exit the list, press **EXIT**.

3. Lift the handset or press **SP-PHONE/HEADSET** or a line button.

- **To erase an item**, repeat steps 1 and 2, and press **CLEAR**.
- If "No items stored" is displayed, the list is empty.

### To put a call on hold

Press **HOLD** during a conversation.

- The line indicator light flashes.
- If using the handset, you can place it on the cradle.

Hold Press EXT1~EXT8 to transfer
--

### To release the hold

Press the line button.

- The other extension users can release the hold by pressing the line button.
- If another phone excluding KX-TS3282W or KX-TS3281W is connected on the same line, you can also release the hold by lifting its handset.

### What the line indicators (LINE 1 and LINE 2) mean

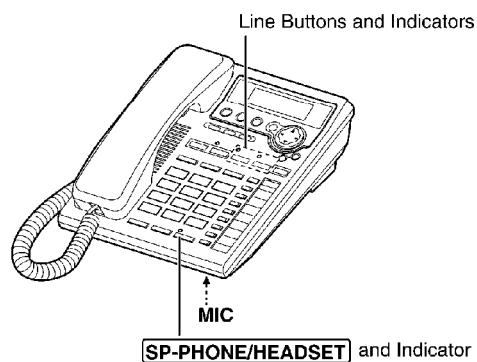
Off	The line is free.
On	You are using the line.
Flashing twice every 2 seconds	Another extension is using the line.
Flashing	You place the call on hold.
Flashing quickly	A call is being received.

## 7.2. Answering Calls

When a call is being received, the unit rings and the called line indicator flashes quickly. "Incoming call" and the line are displayed. You can answer a call by simply lifting the handset. If you subscribe to a Caller ID service, the calling party's information will be displayed after the first ring. In order to view the Call ID information, please wait until the second ring to answer a call.

### Using the speakerphone

- 1** Press **SP-PHONE/HEADSET**.
  - The SP-PHONE/HEADSET indicator lights.
  - The line indicator stops flashing and remains lit.
- 2** Talk into the **MIC** (microphone).
- 3** To hang up, press **SP-PHONE/HEADSET**.
  - The SP-PHONE/HEADSET indicator and the line indicator lights go out.



- You can answer a call by pressing the called line button, instead of pressing **SP-PHONE/HEADSET**.
- When the ringer volume for a selected line is set to **OFF**, the unit will not ring when that line is called.

## 7.3. FLASH Button

Pressing **[FLASH]** allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

- Pressing **[FLASH]** causes to disable the Temporary Tone Dialing mode or the mute.

## Selecting the flash time

The flash time depends on your telephone exchange or host PBX. You can select the following flash times: “80, 90, 100, 110, 200, 250, 300, 400, 600, 700 ms (milliseconds)”. Your phone comes from the factory set to “600 ms”.

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

- 1 Press **[FUNCTION/EDIT]**.

```
-----
▶Save M1,M2,M3
Save directory
```

- 2 Scroll to “Dial setting” by pressing **[▼]** or **[▲]**, and press **[▶]**.

```
Change password
▶Dial setting
Line setting
```

- 3 Scroll to “Set flash time” by pressing **[▼]** or **[▲]**.

```
Set dial mode
▶Set flash time
Call restrict
```

- 4 Press **[▶]**.
  - The current settings are displayed.

```
Flash time
Line1      Line2
_600ms_    600ms
```

- 5 Select the desired time by pressing **[▼]** or **[▲]** for each line.
 

To move to the other line, press **[▶]** or **[◀]**.

- 6 Press **[ENTER]**.
  - A beep sounds.
  - To exit the programming mode, press **[EXIT]**.












- You can exit the programming mode any time by pressing **[EXIT]**.
- If the unit is connected via a PBX, PBX functions (transferring a call etc.) might not work correctly. Consult your PBX supplier for the correct setting.

## 7.4. Directory

You can store up to 50 names and phone numbers in the directory. All directory items are sorted by the first word in alphabetical order. Using the directory, you can make a call by selecting a name on the display.

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

### 7.4.1. Storing Names and Numbers

- 1 Press **FUNCTION/EDIT**.  
Scroll to "Save directory" by pressing  or .
- 2 Press .  
  - The display shows the number of stored items then "Enter name".
- 3 Enter a name, up to 15 characters with the dialing buttons ( to ).  
  - To move the cursor, press  or .
  - If a name is not required, press  (Next key) and go to step 5.
- 4 Press  (Next key).
- 5 Enter a phone number up to 22 digits.  
  - Each time you press **CLEAR**, a digit is erased. To erase all of the digits, press and hold **CLEAR**.
- 6 Press  (Next key).  
  - If you want to change the name or number, press  to reach the desired display and change it.
- 7 Press **ENTER** (Save key).  
  - A beep sounds.
  - To continue storing other items, repeat from step 2. To exit the programming mode, press **EXIT**.
  - You can exit the programming mode any time by pressing **EXIT**.
  - If a pause is required for dialing, press **PAUSE** where needed. If required, you can also insert **FLASH** in a phone number. Pressing **PAUSE** or **FLASH** counts as one digit.
  - If the display shows "Directory full" in step 2, press **EXIT**.

```
Save M1,M2,M3
▶Save directory
LCD contrast
```

```
Directory=
  10 items
```

```
Enter name
└─▶          ▼=Next
```

```
Enter name
Tom Jones└─▶ ▼=Next
```



```
Enter phone no.
```

```
0987654321└─▶ ▼=Next
```



```
Tom Jones
098-765-4321
          ENTER=Save
```

#### 7.4.2. Selecting characters to enter names

The dialing buttons ( **0** to **9** ) can be used to enter letters and symbols. Pressing each button selects a character as shown below.




	Number of times key is pressed										
Keys	1	2	3	4	5	6	7	8	9	10	11
<b>1</b>	#	&	'	(	)	*	,	-	.	/	1
<b>2</b>	a	b	c	A	B	C	2				
<b>3</b>	d	e	f	D	E	F	3				
<b>4</b>	g	h	i	G	H	I	4				
<b>5</b>	j	k	l	J	K	L	5				
<b>6</b>	m	n	o	M	N	O	6				
<b>7</b>	p	q	r	s	P	Q	R	S	7		
<b>8</b>	t	u	v	T	U	V	8				
<b>9</b>	w	x	y	z	W	X	Y	Z	9		
<b>0</b>	0	Space									
	Moves the cursor to the left.										
	Moves the cursor to the right. (To enter another character using the same number key, move the cursor to the next space.)										


**If you make a mistake while entering a name:**


Use  or  to move the cursor to the incorrect character, press **CLEAR** to delete and enter the correct character. Each time you press **CLEAR**, a character is erased.


To erase all characters, press and hold **CLEAR**.


**For example, to enter “Tom Jones”:**


- 1 Press **8** four times.
- 2 Press **6** three times, then press .
- 3 Press **6** once, then press  twice.
- 4 Press **5** four times, press **6** three times, then press .
- 5 Press **6** twice, press **3** twice, then press **7** four times.



To

Tom

Tom Jo

Tom Jones

### **7.4.3. Finding Stored Items**

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

1 Press or to enter the directory list.

- You can go to the Caller List by pressing .

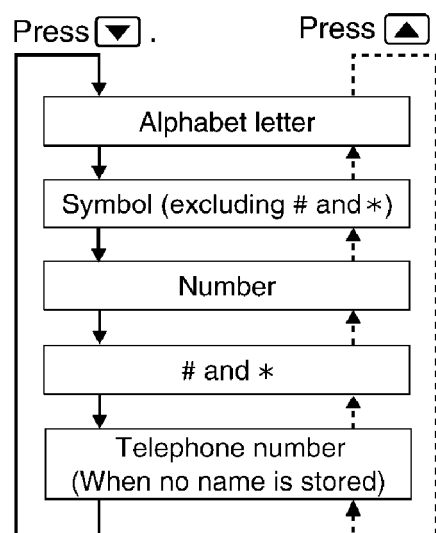
Directory list  
▼▲  
▶=Caller list

2 Scroll to the desired item by pressing or .

- All directory items are stored in the order shown on the right.

**To search for a name by initial:**

- Press the dialing button for the first letter of the desired name until any name with the same initial is displayed (see the Index table below).  
Ex. To find "Frank", press **[3]** repeatedly until the first item under "F" is displayed.
- Press repeatedly until the name is displayed.



- You can exit the directory list any time by pressing **[EXIT]**.
- If "No items stored" is displayed in step 1, the directory is empty. To exit the directory list, press **[EXIT]**.
- If you do not press any buttons for 60 seconds, the unit will exit the directory list.


## Index table



Keys	Index	Keys	Index
<b>[1]</b>	Space, Other symbols, 1	<b>[6]</b>	M, N, O, 6
<b>[2]</b>	A, B, C, 2	<b>[7]</b>	P, Q, R, S, 7
<b>[3]</b>	D, E, F, 3	<b>[8]</b>	T, U, V, 8
<b>[4]</b>	G, H, I, 4	<b>[9]</b>	W, X, Y, Z, 9
<b>[5]</b>	J, K, L, 5	<b>[0]</b>	0




#### **7.4.4. Dialing**

- 1 Press  or  to enter the directory list.

Directory list  
▼▲ ▶=Caller list  


- 2 Scroll to the desired item that you want to dial by pressing  or .

- To exit the directory list, press **EXIT**.

Frank  
456-7890  


- 3 Lift the handset or press **SP-PHONE/HEADSET** or a line button.


- The number is dialed automatically.

- 4 To hang up, place the handset on the cradle or press

**SP-PHONE/HEADSET**.



- You can also dial the stored number as follows:



1. Lift the handset or press **SP-PHONE/HEADSET** or a line button.
2. Find the desired item (follow steps 1 and 2 above).
3. Press **ENTER** (Send key).


Frank  
456-7890  
ENTER=Send  


#### **7.4.5. Editing**




**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

1 Press  or  to enter the directory list.




2 Scroll to the directory item you want to change by pressing  or .

Jane  
456-7890  



3 Press **FUNCTION/EDIT**.




Enter name  
Jane  
 =Next  


4 Edit the name using the dialing buttons (**0** to **9**), up to 15 characters.




- To move the cursor, press  or .
- If you do not need to change the name, press  (Next Key) and go to step 6.




Enter name  
Jane Walker  
 =Next  


5 Press  (Next Key).


4567890  
 =Next  


6 Add a number to the current number.

- Each time you press **CLEAR**, a digit is erased. To erase all of the digits, press and hold **CLEAR**.
- To move the cursor, press  or .
- If you do not need to change the number, press  (Next Key) and go to step 8.

12344567890  
 =Next  


7 Press  (Next Key).

- If you want to change the name or number, press  to reach the desired display and change it.

Jane Walker  
1-234-456-7890  
ENTER=Save  


8 Press **ENTER** (Save Key).

- A beep sounds.
- To continue editing other items, repeat from step 2.

- You can exit the programming mode any time by pressing **EXIT**.

### 7.4.6. Erasing

Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.

1 Press ◀ or ▶ to enter the directory list.

2 Scroll to the directory item that you want to erase by pressing ▼ or ▲.

3 Press **CLEAR**  
•To stop erasing, press ◀ (No key).

Clear?  
◀=No ENTER=Yes  
⏏

4 Press **ENTER** (Yes key) or **CLEAR**.  
•A beep sounds and the item is erased.  
•To erase other items, repeat from step 2.  
•To exit the directory list, press **EXIT**.

Clear  
⏏

## 8. DISASSEMBLY INSTRUCTIONS

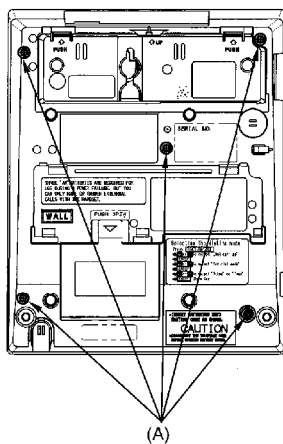


Fig. 1

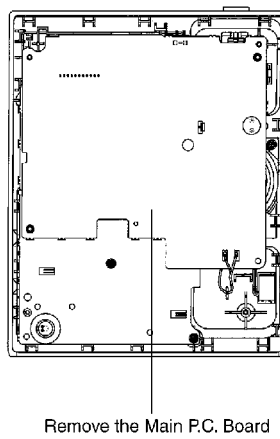


Fig. 2

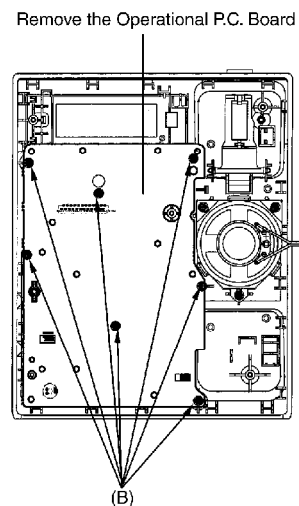
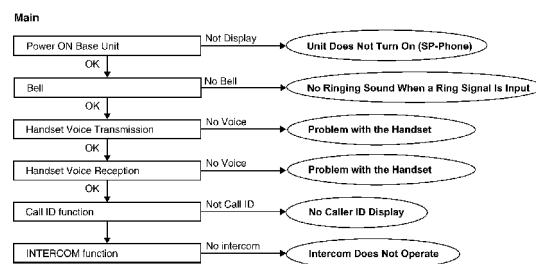


Fig. 3

Shown in Fig.	To remove.	Remove.
1	Lower Cabinet	Screws (2.6 × 12).....(A) × 5
2	Main P.C. Board	Main P.C. Board
3	Operational P.C. Board	Screws (2.6 × 8).....(B) × 7
		Operational P.C. Board

## 9. TROUBLE SHOOTING GUIDE

( )...Line 2



**Cross Reference:**

**Unit Does Not Turn On (SP-Phone) ( ).**

**No Ringing Sound When a Ring Signal Is Input ( ).**

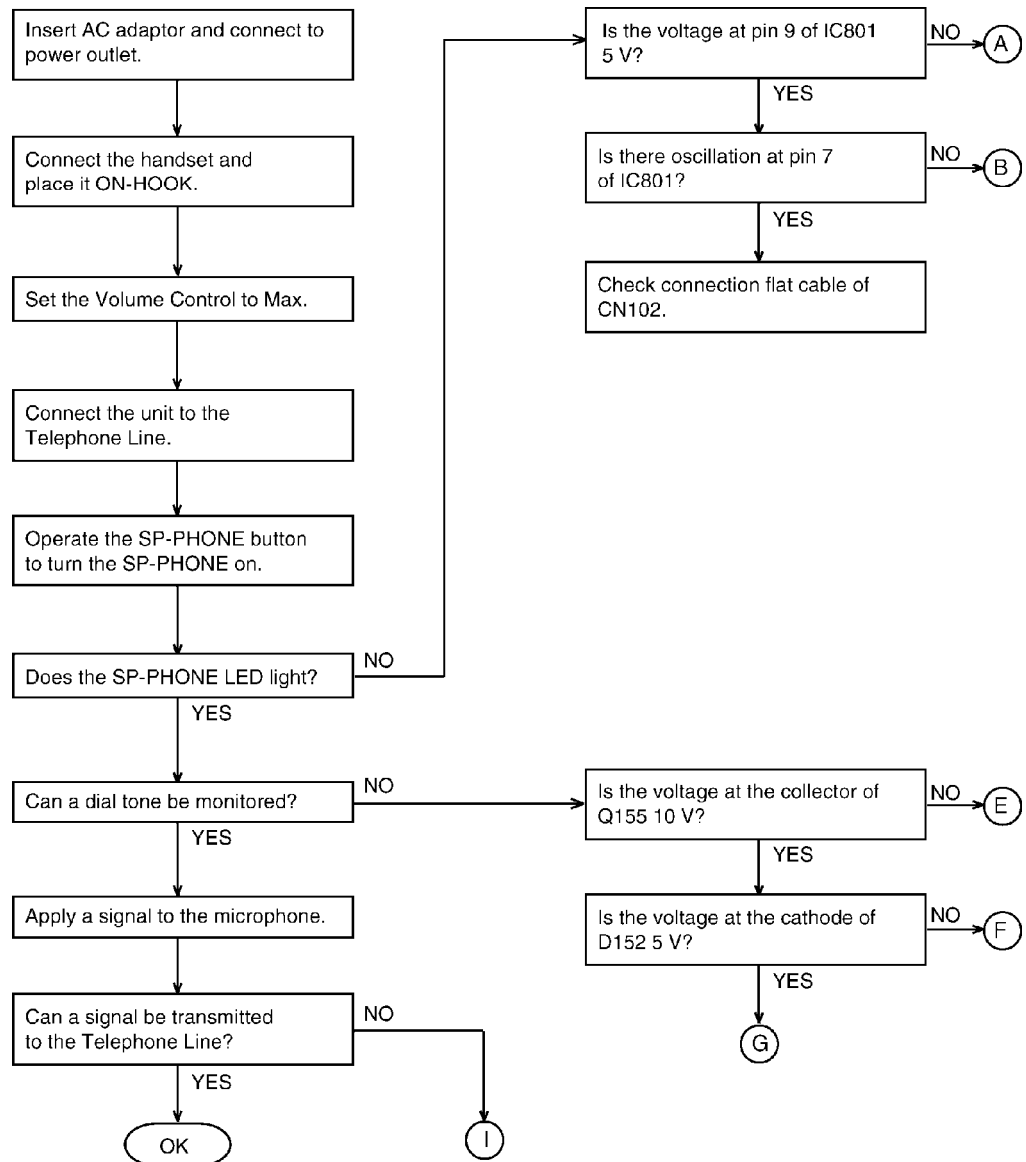
**Problems with the Handset ( ).**

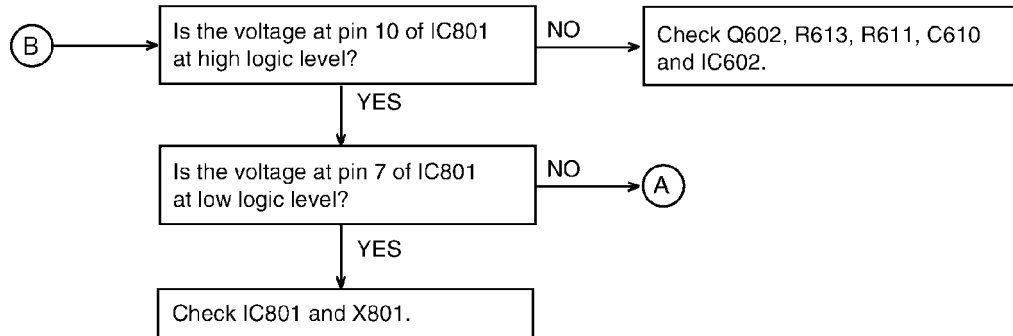
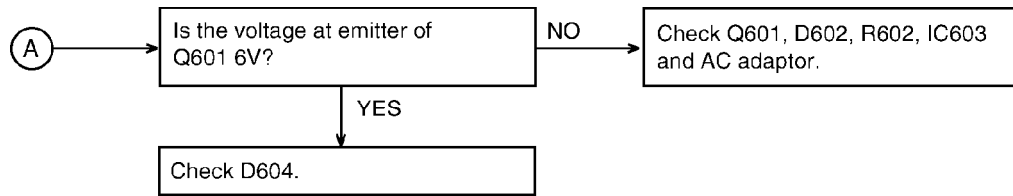
**No Caller ID Display ( ).**

**Intercom Does Not Operate ( ).**

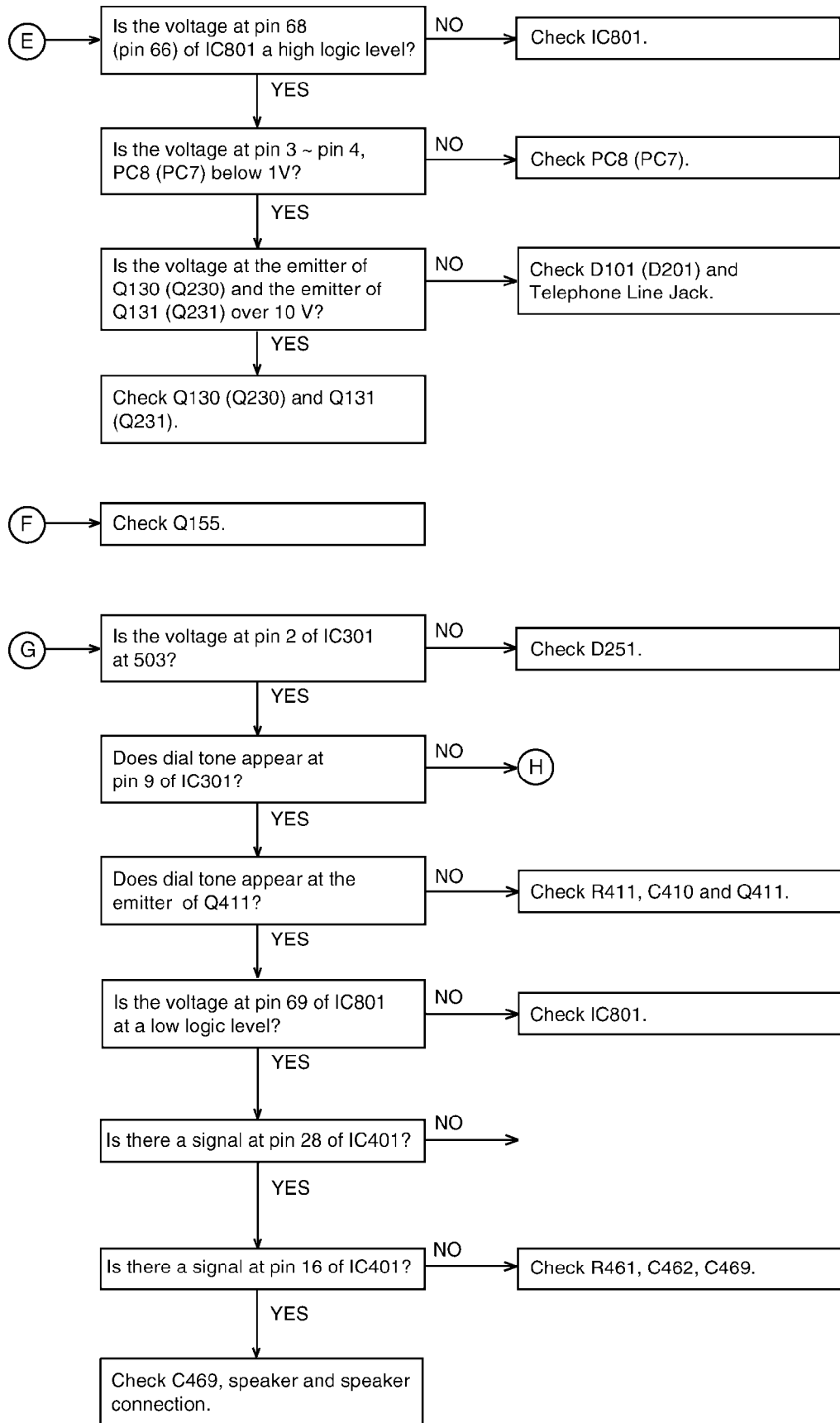
### 9.1. Unit Does Not Turn On (SP-Phone)

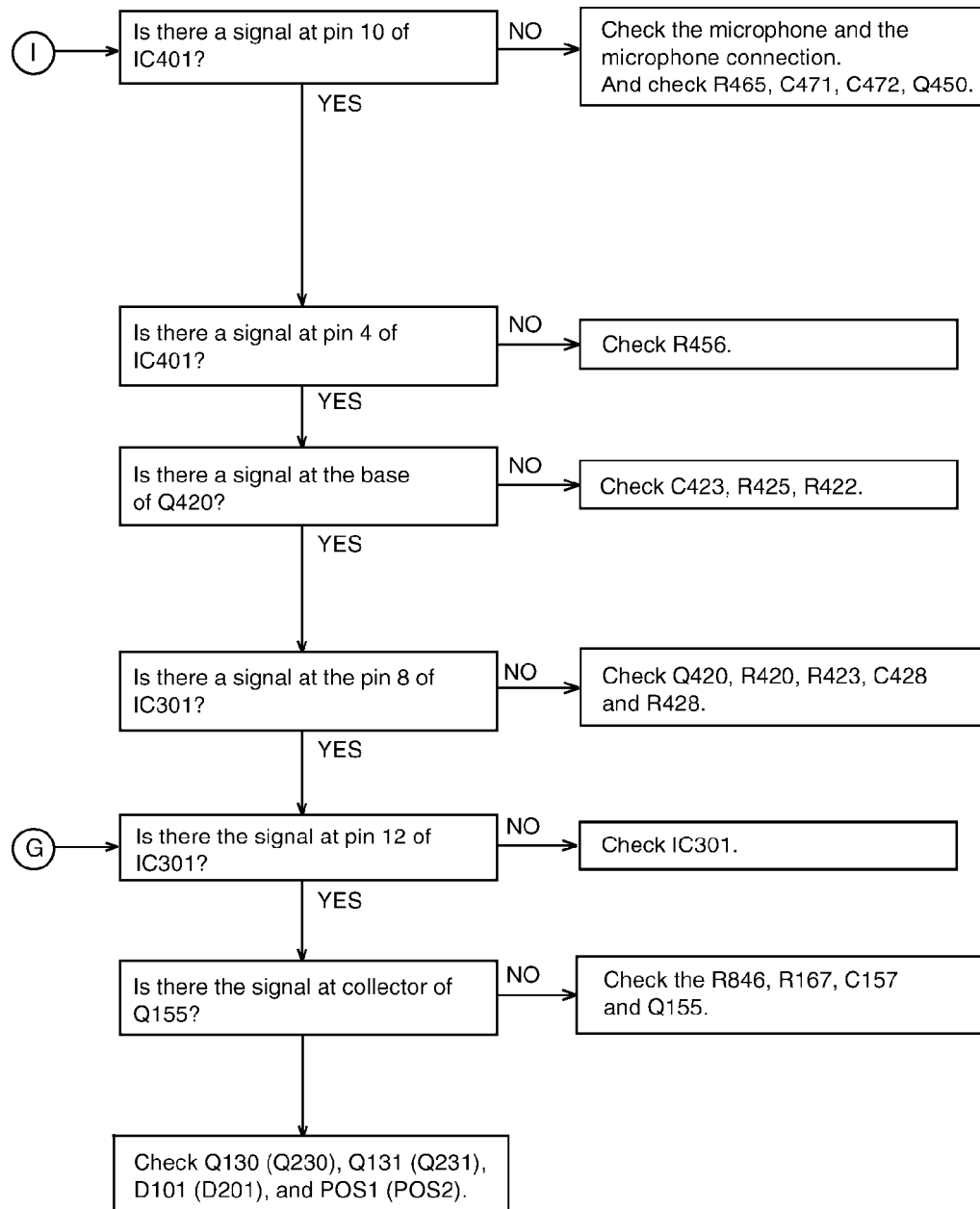
( )...Line 2



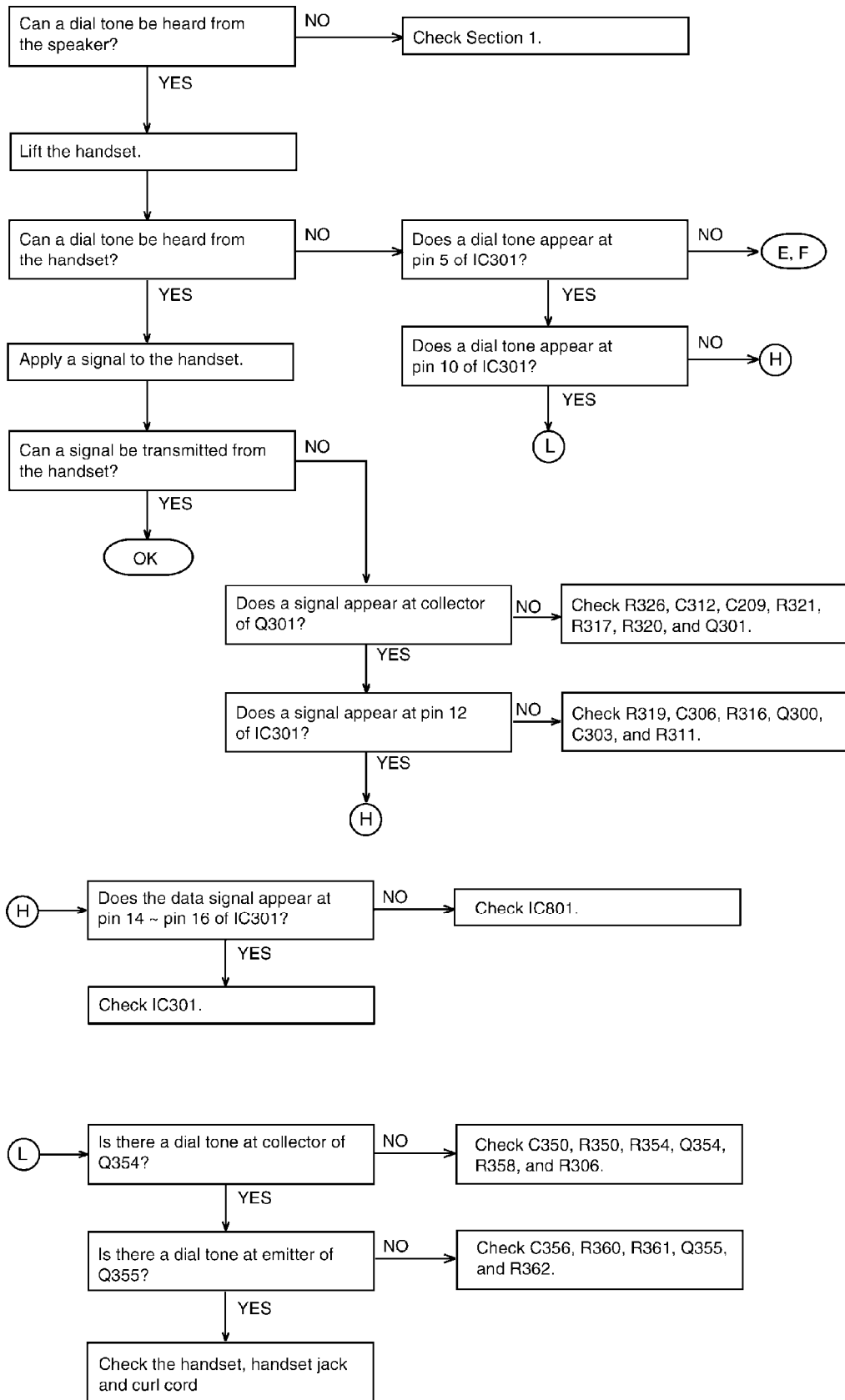




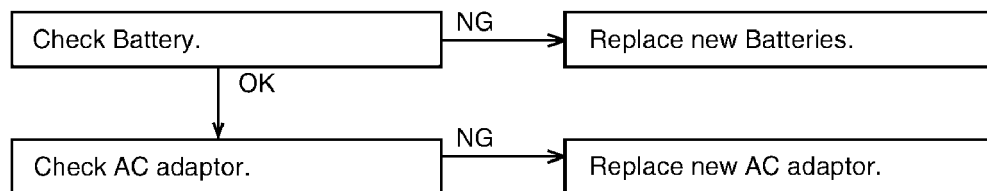




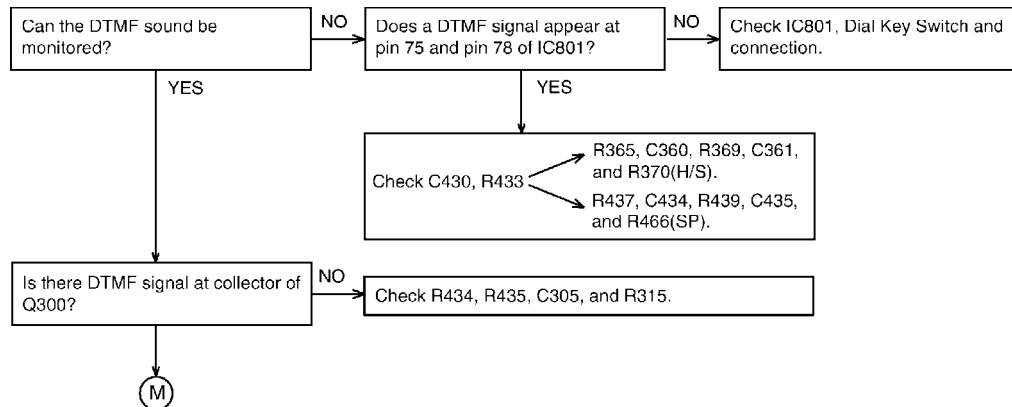
## 9.2. Problems with the Handset



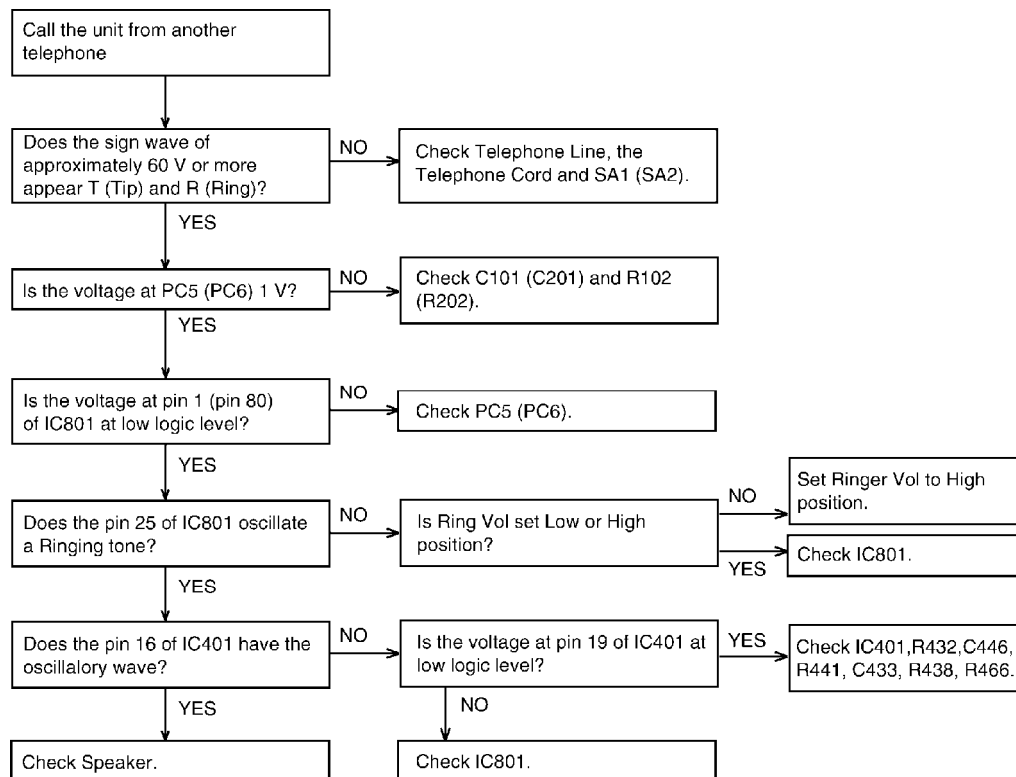
### 9.3. Unit Turns Off When Pulse Dialing



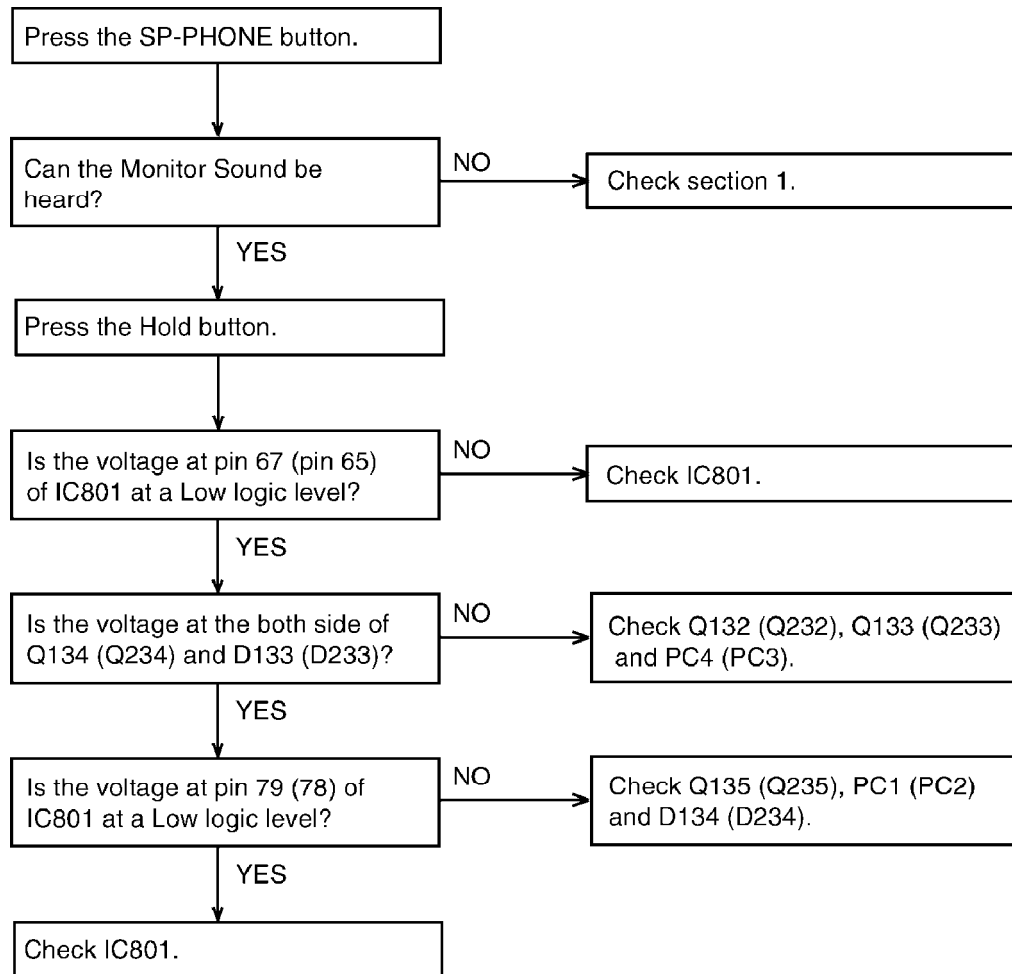
## 9.4. Tone Dialing Problems



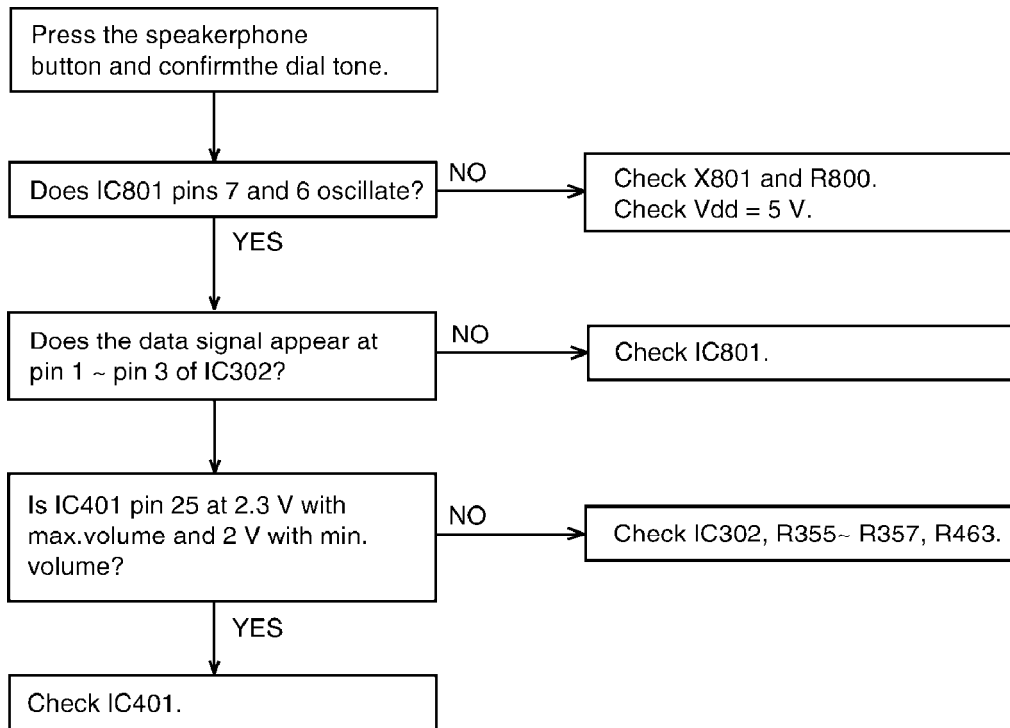
## 9.5. No Ringing Sound When a Ring Signal Is Input



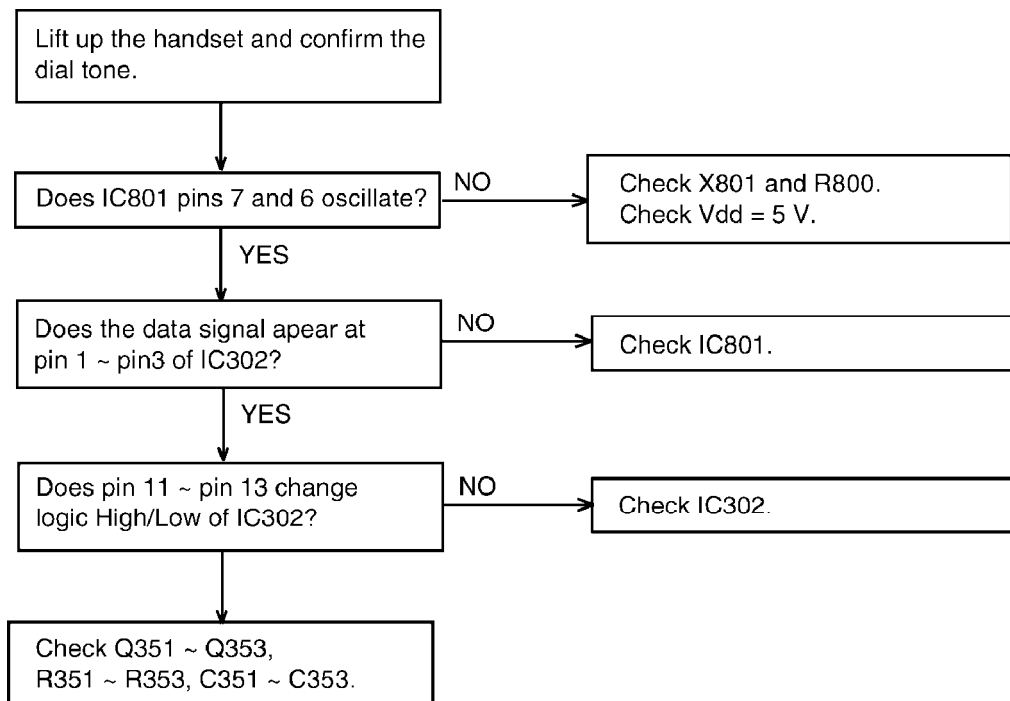
## 9.6. Unit Does Not Hold



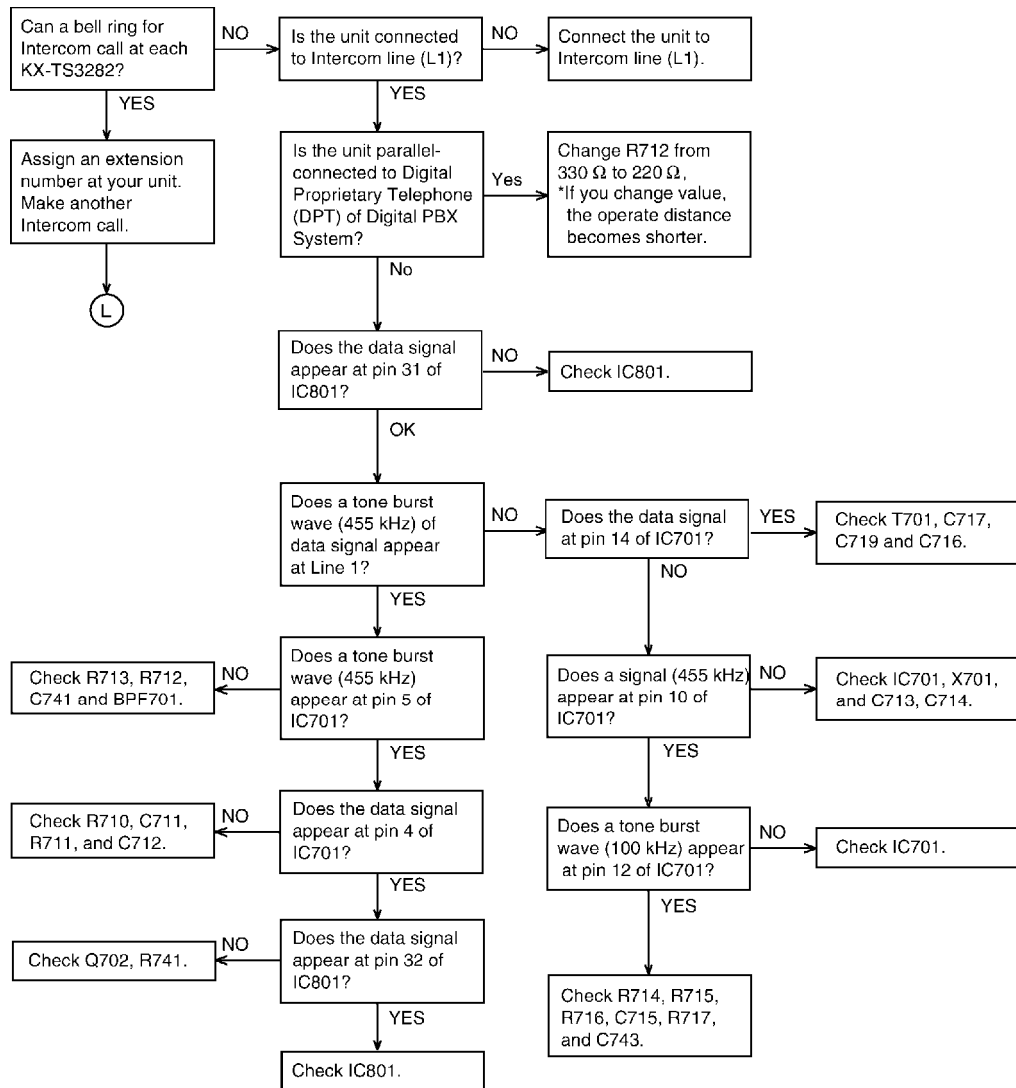
### 9.7. If the Electronic Volume of the Speakerphone Does Not Work

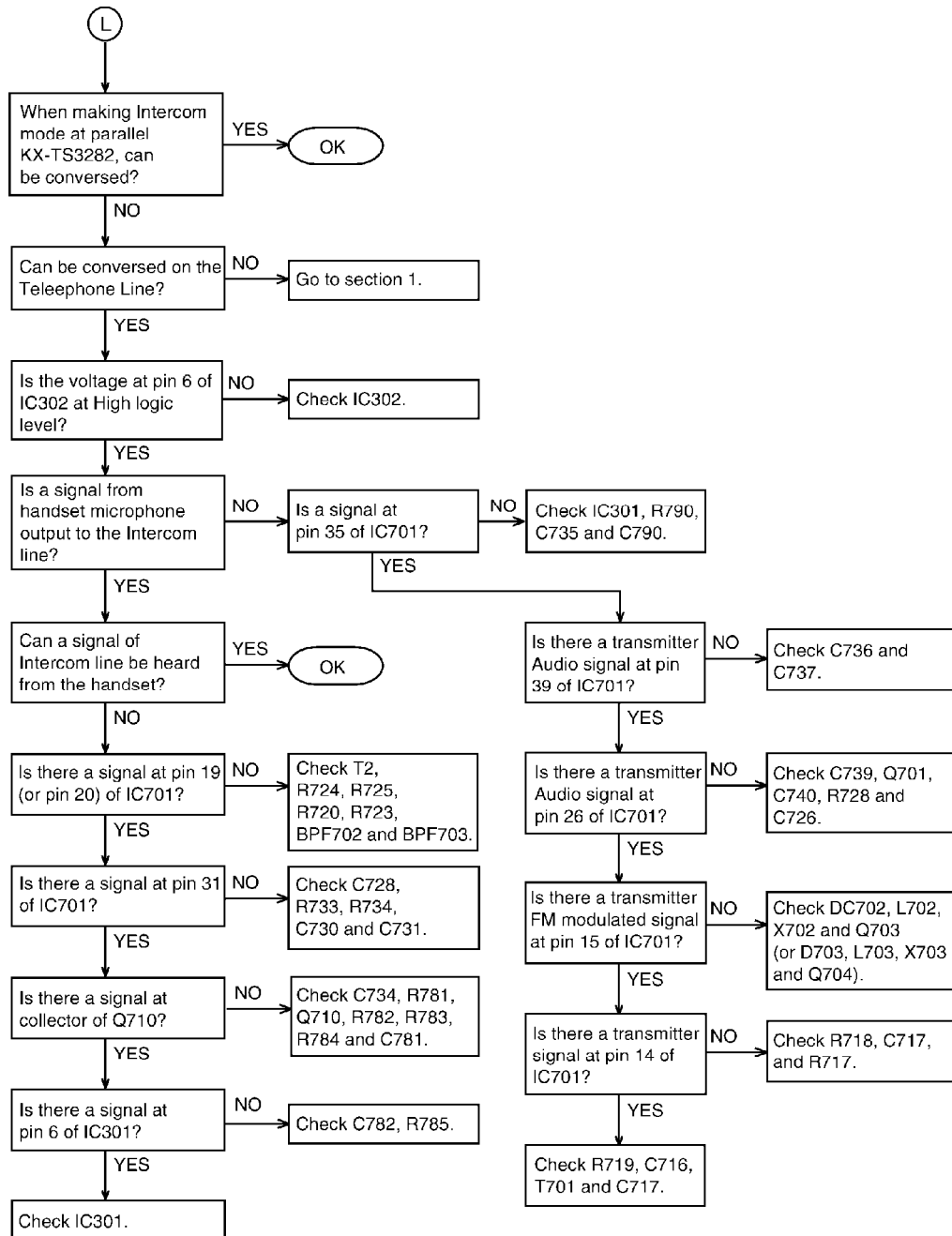


## 9.8. If the Electronic Volume of the Handset Does Not Work



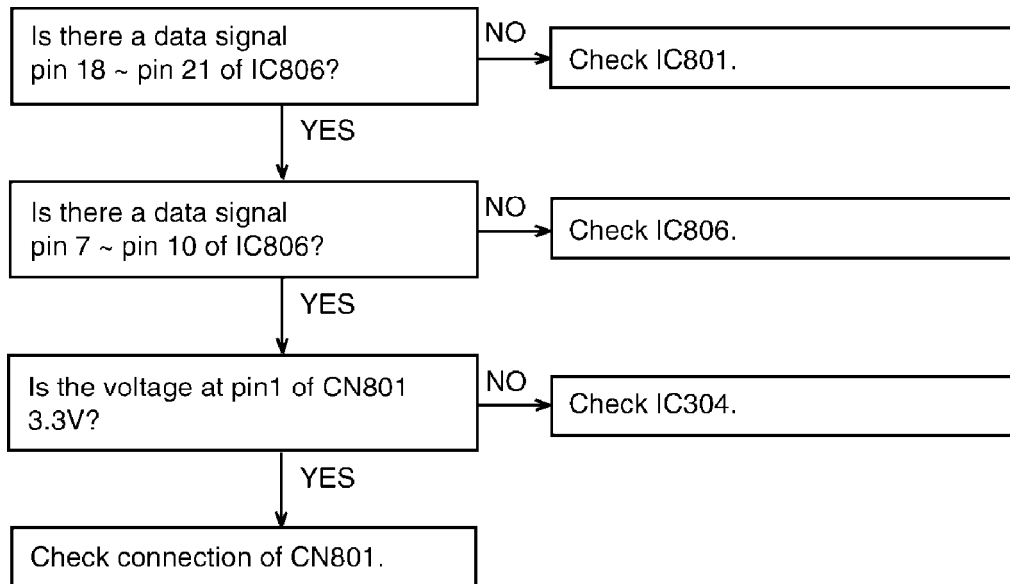
## 9.9. Intercom Does Not Operate



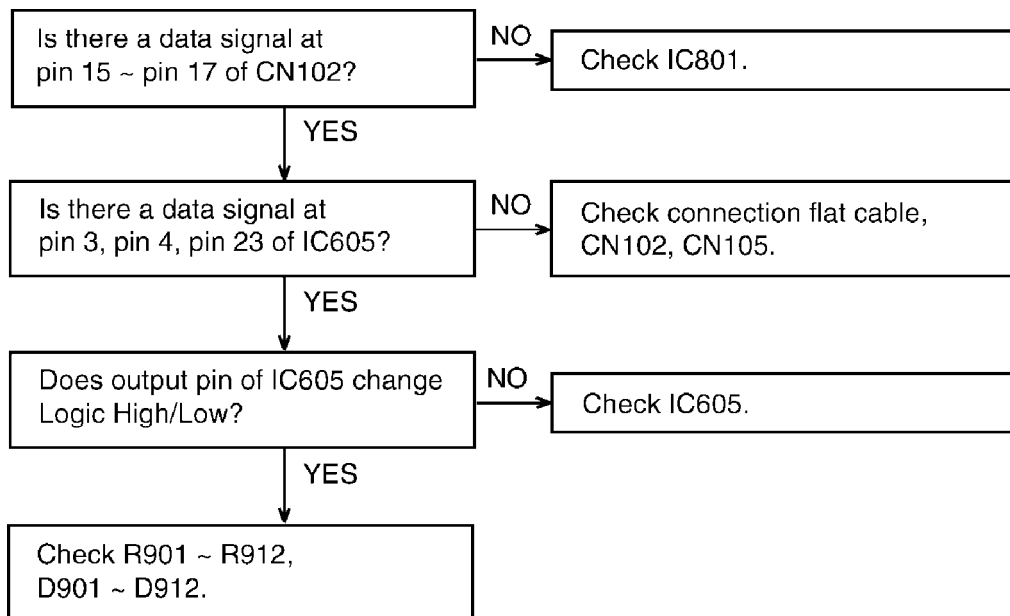


## 9.10. No LCD Display

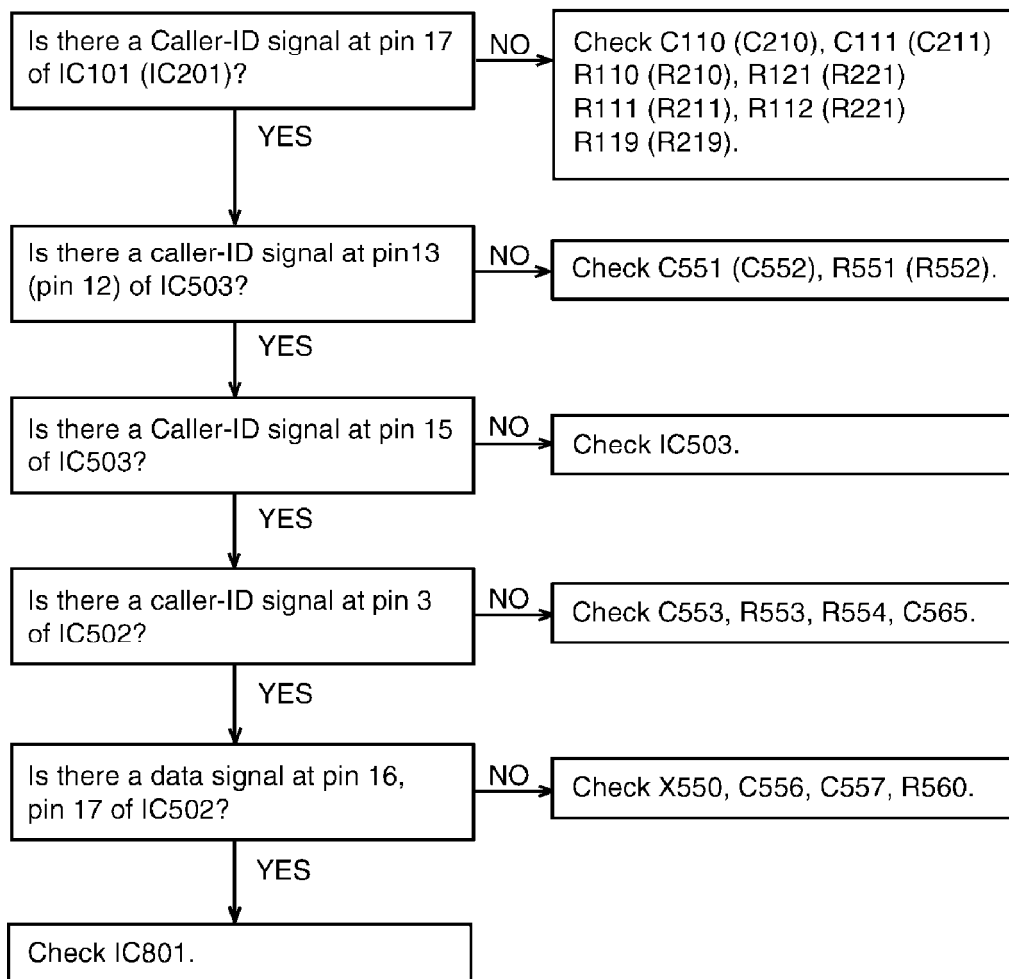




### 9.11. LED Is Not Turned On

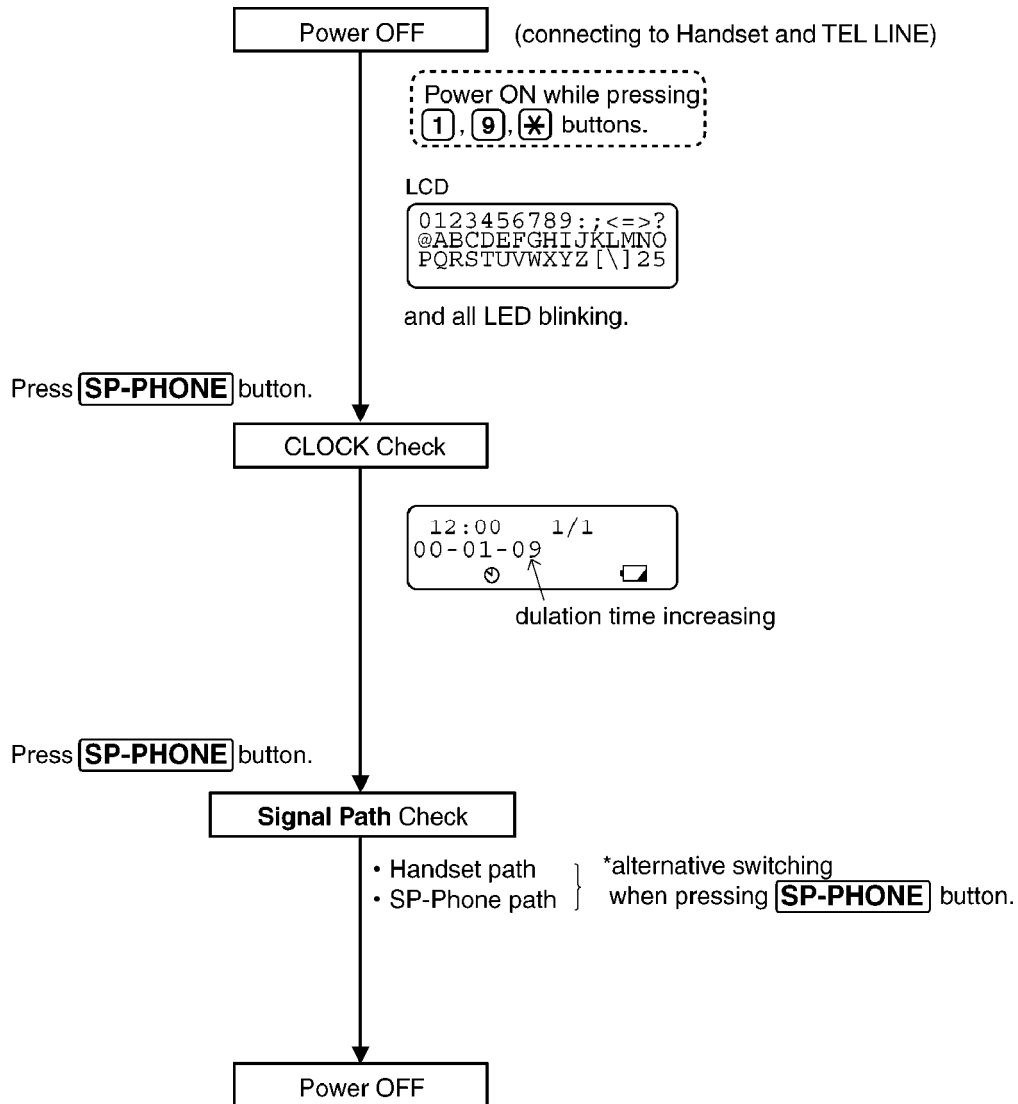


### 9.12. No Caller ID Display



## 10. TEST MODE

### 10.1. Test Mode Flow Chart



Signal Pass:

Refer to **SIGNAL ROUTE** ().

## 11. BLOCK DIAGRAM

## 12. CIRCUIT OPERATIONS

### 12.1. Telephone Line Interface

Circuit Operation: ( )...Line 2

This unit is connected to the telephone circuit by a 6-core full modular jack. When L1 (L2) key is pressed, the speakerphone goes ON automatically, obtaining Line 1 (Line 2). An available line is also selected and obtained by simply putting the handset into an OFF-HOOK status. Surge absorbers SA1, SA2 are for surge suppression. The impedance of the unit is matched to each Line by the circuit in the vicinity of Q5.

When Hook Switch is turned ON (OFF-HOOK), pin 72 of IC801 detects OFF-HOOK, pin 68 (pin 66)

becomes Low according to selected L1 (or L2), and Q130, Q131 (Q230, Q231) turned on and the Line Switch for that line (Line 1, Line 2) closes.

Line current flows through Q130. As a result, a loop is formed through D101 (D201) → Emitter of Q130 (Q230) → Collector of Q130 (Q230) → D131 (D231) → L101 → R154 → Collector of Q155 → Emitter of Q155 → R163 → D152 → Collector of Q131 (Q231) → Emitter of Q131 (Q231) → D130 (D230) → D101 (D201).

During a conference, the line current is the sum of the currents in the two lines.

If the line current exceeds 60 mA, the voltage across R154 increases, turning Q153 ON. As a result, current is supplied from Q153 Collector → R157 → R158 → base of Q154, turning Q154 ON. Consequently, current flows through R156, preventing the DC resistance of the unit from rising.

## 12.2. Reset Circuit

**Function:**

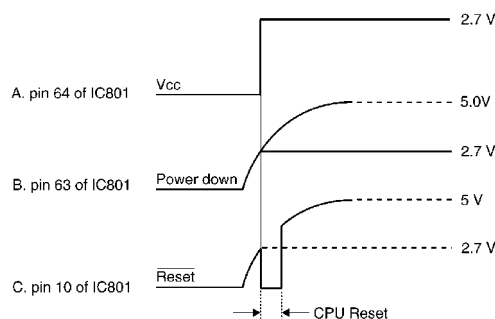
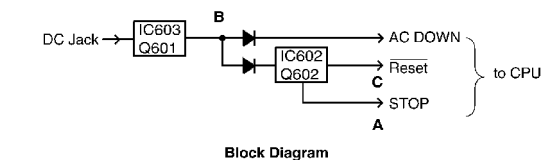
The reset circuit is a detection circuit which is used to detect the power supply voltage and apply a reset to the microprocessor when the circuit changes from an ON-HOOK status to an OFF-HOOK status.

**Circuit Operation:**

The reset conditions are as follows:

1. When AC Adaptor into outlet.
2. When the power given out;
  - a) ON-HOOK → OFF-HOOK

In the case of one of above conditions, a reset signal will be sent to the microprocessor IC801.



## 12.3. Tone Dial Circuit

**Function:**

The tone dialing circuit consists of a DTMF (Dual Tone Multi Frequency) signal generator (outputted from) for tone dialing, and also a circuit for outputting the signal to line.

The DTMF circuit identifies inputs from the 12 keys (1, 2, 3, 4, 5, 6, 7, 8, 9, 0, \* and #) by means of a total of seven frequencies, that is four low frequencies (Low group) and three high frequencies (High group).

**Signal Pass:**

Refer to **SIGNAL ROUTE** ().

The signal combination and frequency corresponding to each dial key are shown below.

**Tone Frequencies**

High Group Low Group	H1	H2	H3	Low Group	Frequencies	High Group	Frequencies
	L1	L2	L3	L1	L2	L3	L4
L1	1	2	3	697 Hz ± 10 Hz	H1	1209 Hz ± 18 Hz	
L2	4	5	6	770 Hz ± 12 Hz	H2	1336 Hz ± 20 Hz	
L3	7	8	9	852 Hz ± 13 Hz	H3	1477 Hz ± 22 Hz	
L4	*	0	#	941 Hz ± 14 Hz			

## 12.4. Pulse Dial Circuit

**Circuit Operation: ( )...Line 2**

The dial pulses are generated by the CPU IC801, and reach the Telephone Line via the following path;

pin 68 (pin 66) of IC801 → PC8 (PC7) → Q130 and Q131 (Q230 and Q231) → D131 and D130 (D231 and D230) → Telephone Line

## 12.5. Speakerphone Circuit

**Function:**

The circuit controls the automatic switching of the transmitted and received signals, to and from the telephone line, when the unit is used in the hands -free mode.

**Circuit Operation:**

The speakerphone can only provide a one-way communication path.

In other words, it can either transmit an outgoing signal or receive an incoming signal at a given time, but cannot do both simultaneously. Therefore, a switching circuit is necessary to control the flow of the outgoing and incoming signals.

This switching circuit is contained in IC401 and consists of a Voice Detector, TX Attenuator, RX

Attenuator, Comparator and Attenuator Control. The circuit analyzes whether the TX(transmit) or the RX(receive) signal is louder, and then it processed the signals such that the louder signal is given precedence.

The Voice Detector provides a DC input to the Attenuator Control corresponding to the TX signal. The Comparator receives a TX and a RX signal, and supplies a DC input to the Attenuator Control corresponding to the RX signal.

The Attenuator Control provides a control signal to the TX and the RX attenuator to switch the appropriate signals on and off. The Attenuator Control also detects the level of the volume control to automatically adjust for changing ambient conditions.

### 1. Transmission/Reception signal path:

Refer to SP-PHONE TX/RX in **SIGNAL ROUTE** ().

### 2. Transmission/Reception switching

The comparison result between TX and RX outputs as a DC level of pin 25 of IC401. TX level is high ..... pin 26 = pin 22 - 6mV RX level is high ..... pin 25 = pin 21 - 150mV Comparator output is connected to the attenuator control inside of IC601.

### 3. Voice detector

The output of the mic amp (pin 10 of IC401) is supplied to pin 14 of IC401 as a control signal for the voice detector.

### 4. Attenuator control

The attenuator control detects the setting of the volume control through pin 23 of IC401 to automatically adjust for changing ambient conditions.

## 12.6. Bell Detection Circuit and Bell Generation Circuit

Circuit Operation: ( )...Line 2

When the bell signal is received from the line, it passes through C101 (C201) and R102 (R202), turning PC5 (PC6) ON. As a result, pin 1 (pin 80) of IC801 becomes Low level. In this way, a ringer tone which corresponds to each line is generated from pin 25 of IC801.

This tone passes through the following path: pin 25 of IC801 → R432 → C446 → R441 → C433 → R438 → R466 → C467 → pin 20 of IC401 → pin 16 of IC401 → C469 → Speaker, the generated signal causing the tone ringer to produce a ringing tone.

## 12.7. Hold Circuit

Function:

This circuit is designed to hold a line which is IN USE in the handset mode or speakerphone mode. In this case, the LED indication will change from a steady glow to a flashing indication.

Circuit Operation: ( )...Line 2

**(Holding)**

If the Hold key is pressed during a conversation using the handset or the speakerphone, the CPU IC801 judges that a hold status has been applied, consequently pin 67 (pin 65) of IC801 becomes High level, and PC4 (PC3) goes ON.

Q132 and Q133 (Q232 and Q233) goes ON, and Q134 (Q234) goes ON, and the line voltage is held.

**(Hold Cancellation)**

If parallel-connected KX-TS3282 is put into an OFF-HOOK status during a hold status. When the signal indicating that the KX-TS3282 connected in parallel is in off-hook condition causing the hold status to be canceled.

At this time, LED goes out.

## **12.8. Intercom**

### **12.8.1. Principle of Operation of two-line Intercom**

As shown above, one (Line 1) of the two telephone lines is also used as the intercom line, and the data signals consisting of

the FM-modulated audio signal and the tone burst signals are transmitted to the line.

There is no distinction among 8 sets when using them as the master unit or the slave unit. If a set is used to call the other party,

for example,

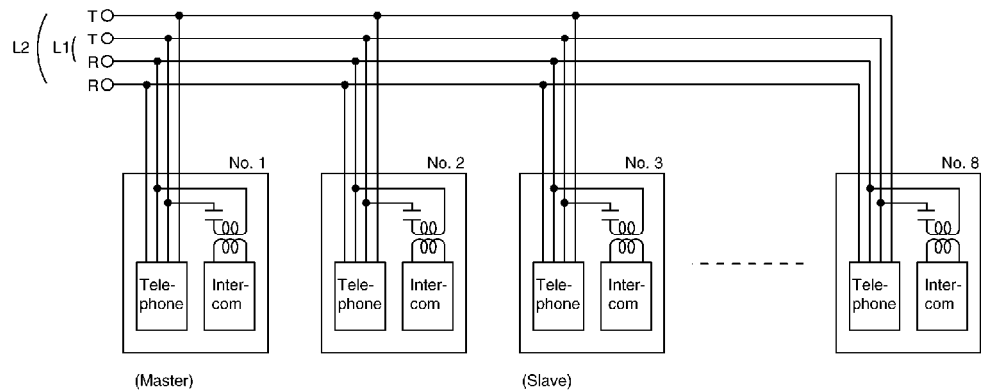
No.1 call to No.3 , then No.1 become “Master”.

No.3 become “Slave”.

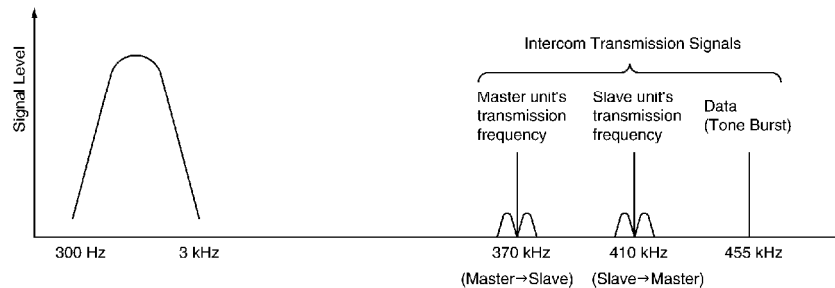
The Master unit use 370 kHz for transmission to Slave unit, and the Slave unit use 440 kHz for transmission.

In the idle mode when all units are waiting, each unit is used Data (455 kHz) for checking a status. In short, it is for watching the other units, for example busy mode or intercome mode etc.

### ① Connection Diagram



### ② Frequency Zone

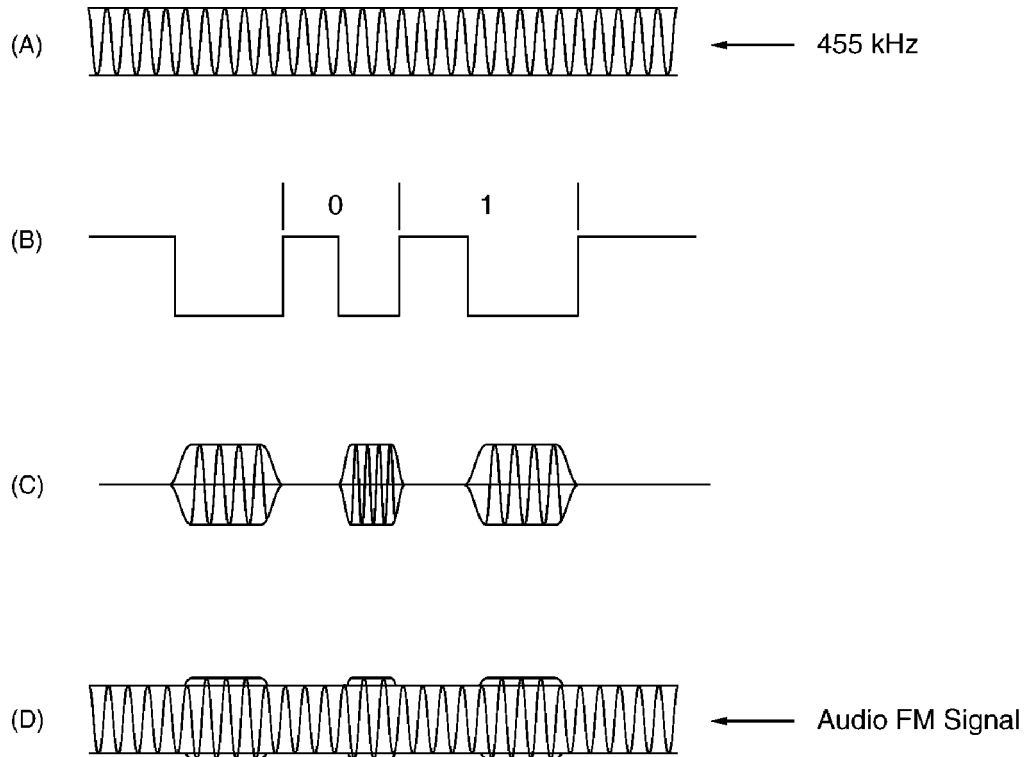


## 12.8.2. Data Communication Block

### 1. Data Transmission

The oscillated waveform of 455 kHz (A) at pin 10 of IC701 becomes the tone burst signal (C) at pin 12 of IC701 by the data signal (B) from pin 31 of the microcomputer IC801. And then it passes the amplifier mixed with the audio FM signal and is transmitted to the telephone line via the transformer (T701).



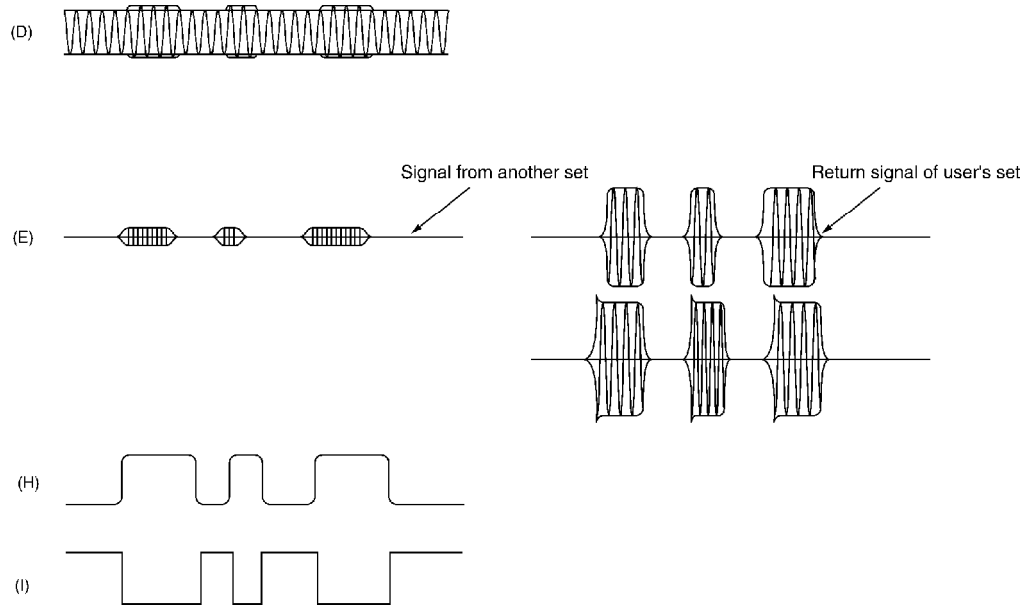


**\*When an intercom transmission is not in use, the waveform of (D) becomes the same burst signal as (C).**

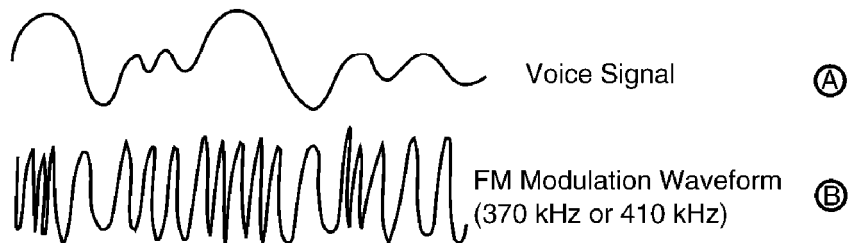
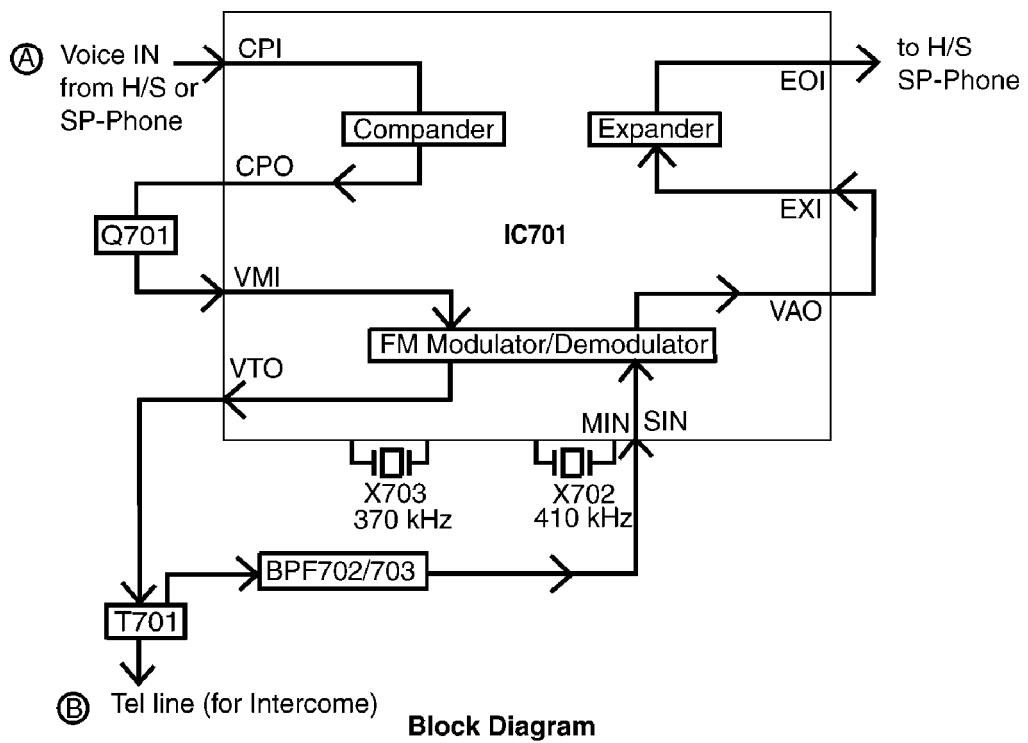
## **2. Data Reception**

The data that is transmitted to the telephone line from another set is input via T701 in reverse order of the data transmission (D). This burst signal passes BPF701 to separate from the audio signal and then only 455 kHz is extracted (E) at pin 5 of IC701.

This burst signal is amplified and demodulated at pin 4 of IC701 (I). The amplified burst signal (J) is input to pin 32 of the microcomputer IC801.



### 12.8.3. Voice Communication Block



#### 1) Voice Transmission

The transmitting signal from the H/S or SP-phone is input to CPI (the expander is used to reduce a noise generated by the transmission system, a cross talk of line transmission, pulse sound, or ring signal, etc.) and then output from CPO after compression according to the signal level.

The audio signal compressed by the compander is amplified by Q701 and input to VMI for FM modulation/demodulation and output VTO after the FM modulation. At this time, the regulation of transmitting frequency is made by X702 or X703.

The XA is switched by Internal depending on whether the set is a master unit or a slave unit. The switching signal is controlled by Q1 (Master: H, Slave: L).

The output frequency of 15 is 370 kHz (by X703) when a master unit is used or to 410 kHz (by X702) when a

Slave unit is used.

The FM-modulated audio signal switches on and off the signal output from OE. The transmission signal is not sent to the line until an intercom transmission starts. This is controlled by Q2 (H: Voice transmission, L: Prohibition of transmission).

The transmission signal from VTO passes the amplifier mixed with the data signal and then is transmitted to the telephone line via the transformer (T701).

## 2) Voice Reception

The data that is transmitted to the telephone line from another set is input via T701 in reverse order of the transmission.

This signal passes BPF to separate the user's transmission signal from another set's signal and to extract the audio signal of another's set. If the user's set is a master unit, the BPF702 (BPF703) is selected since the carried signal of 410 kHz (370 kHz) is sent from another set.

The receiving signal from another set is input to SIN (MIN) of IC701 to execute FM demodulation. The demodulated audio signal is output from VAO and input to EXI of the expander for expansion in contrast with the voice transmission. This signal is output from EOI as the audio signal and becomes the receiving voice to H/S or SP-phone circuit.

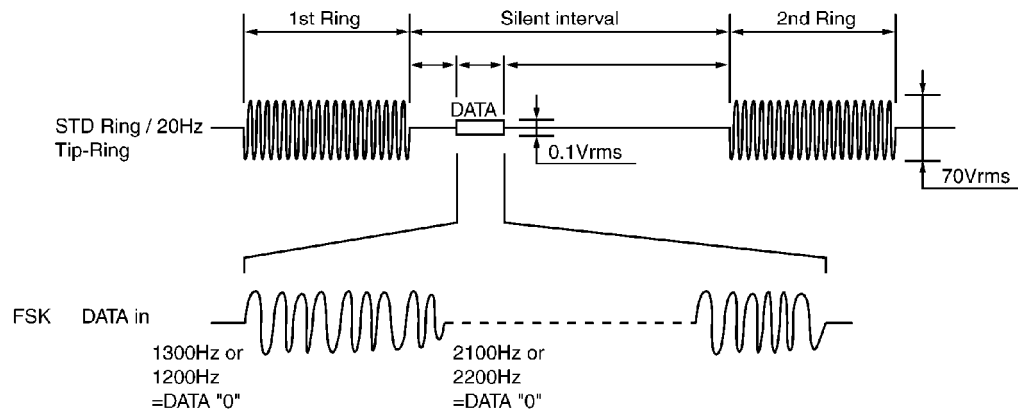
## 12.9. Calling Line Identification Circuit (Caller ID)

### Function:

The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used.

The Caller-ID data from exchange is supplied to the telephone using either method of FSK. The method is chosen according to the exchange of telephone office. This unit is available to receive the data with both methods and displays the received data on LCD.

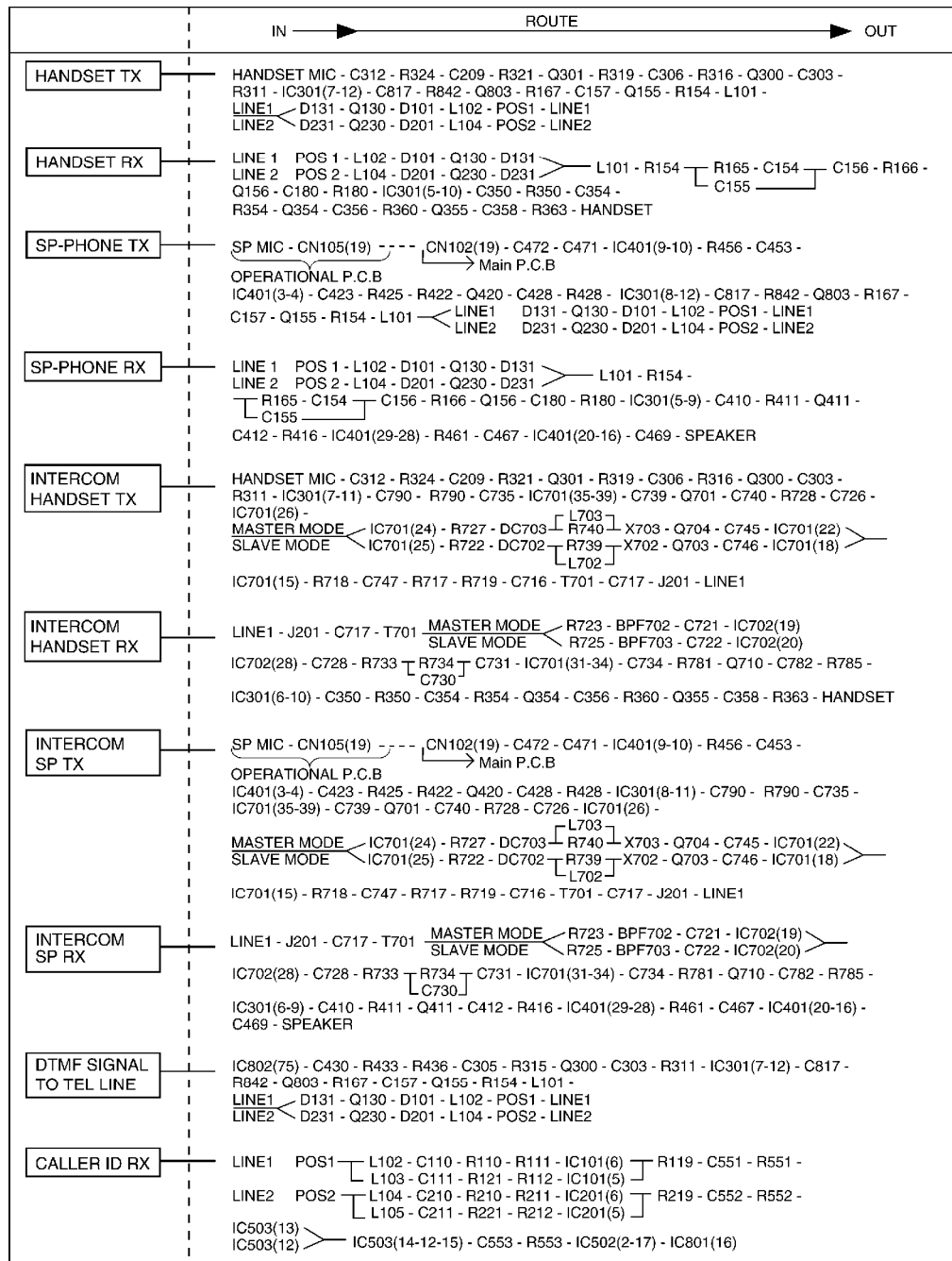
### - FSK (Frequency Shift Keying) format



**Signal Pass:**

Refer to **SIGNAL ROUTE** ().

## 13. SIGNAL ROUTE

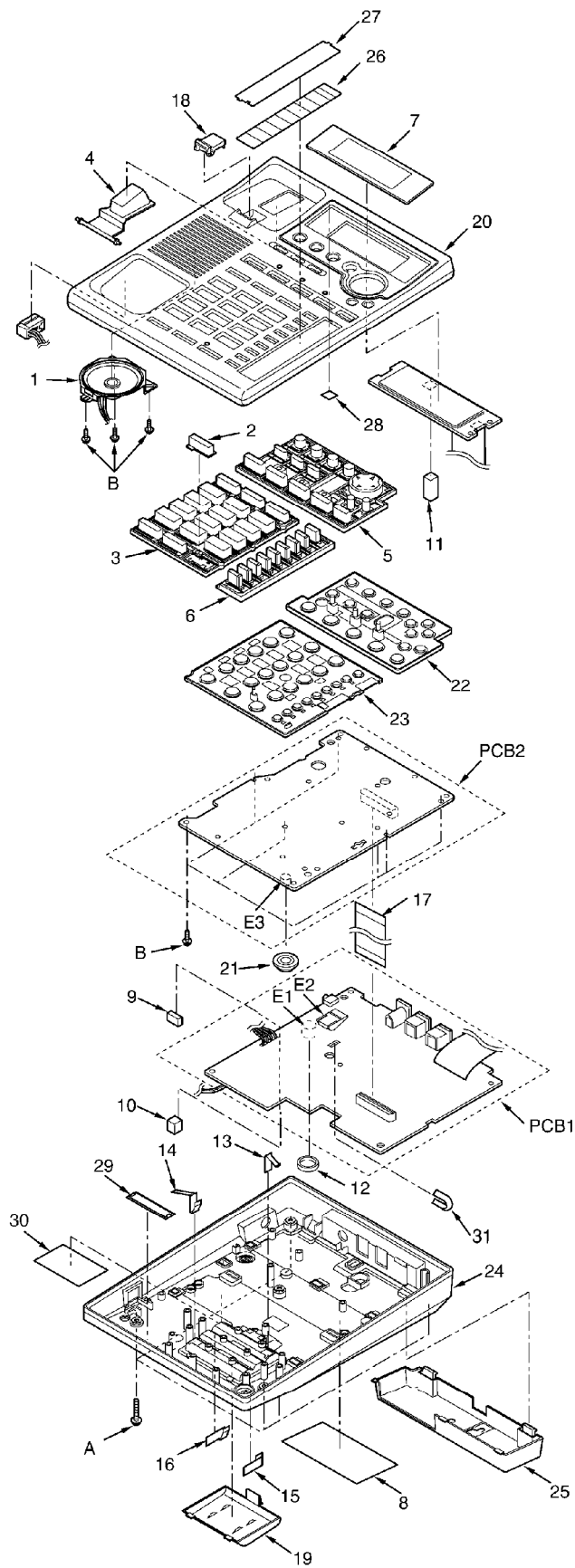




## 14. CPU DATA

### 14.1. IC801

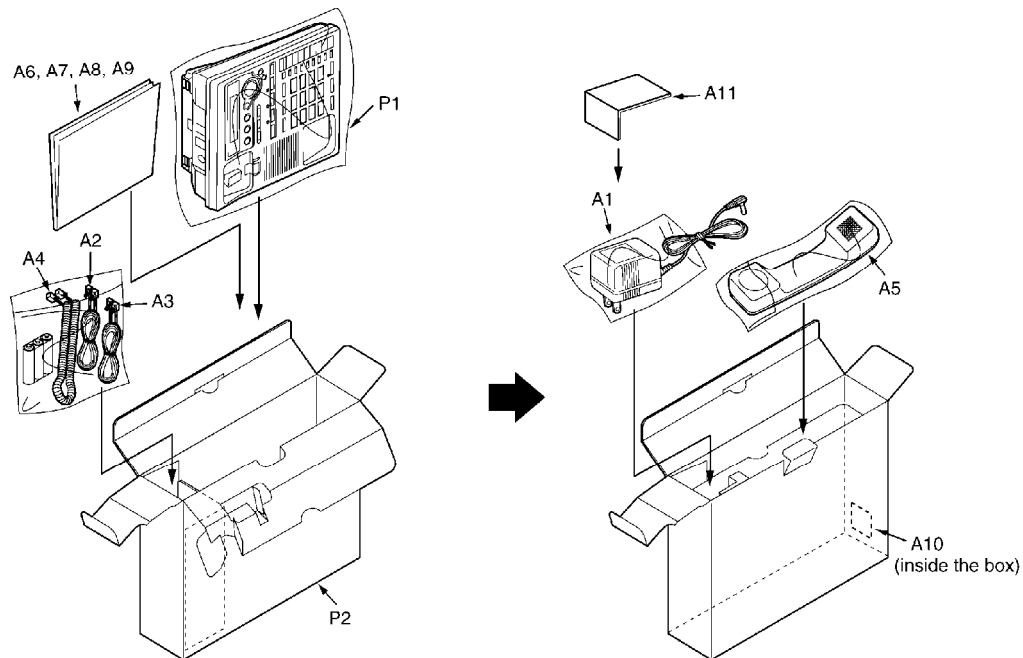
Pin	Description	I/O	High	Hi-z	Low	Pin	Description	I/O	High	Hi-z	Low
1	L1 BELLIN	D.I	Normal	-	Bell	41	LCD_RESET	D.O	Normal	-	Reset
2	AVss	-	-	-	-	42	DTMF_CLOCK	D.O	Active	-	Active/Normal
3	X1	-	Active	-	Active	43	DTMF STD	D.I	DTMF input	-	Normal
4	X2	-	Active	-	Active	44	DTMF SD	D.I	DTMF data/Normal	-	DTMF data
5	Vss	-	-	-	Fix	45	DTMF LOAD/PULSE MUTE	D.O	Normal/Mute	-	Active/UnMute
6	OSC2	-	Active	-	Active	46	MORASI MUTE	D.O	MUTE	-	UNMUTE
7	OSC1	-	Active	-	Active	47	TX MUTE	D.O	MUTE	-	UNMUTE
8	TEST	-	-	-	Fix	48	RX MUTE	D.O	MUTE	-	UNMUTE
9	Vcc	-	Fix	-	-	49	KEY_IN1	D.I	-	Normal	Key_In
10	RESET	-	Normal	-	Reset	50	KEY_IN2	D.I	-	Normal	Key_In
11	MODEM_FSKEN	D.O	Active	-	Non Active	51	KEY_IN3	D.I	-	Normal	Key_In
12	CLOCK1	D.O	Active	-	Active	52	KEY_IN4	D.I	-	Normal	Key_In
13	Serial In	D.I	Active	-	Active	53	KEY_IN5	D.I	-	Normal	Key_In
14	Serial Out	D.O	Active	-	Active	54	KEY_IN6	D.I	-	Normal	Key_In
15	MODEM_CLOCK	D.I	Active	-	Active	55	KEY_IN7	D.I	-	Normal	Key_In
16	MODEM_DATA	D.I	Active	-	Active	56	KEY_IN8	D.I	-	Normal	Key_In
17	MODEM_STD	D.I	CAS	-	Normal	57	STROB1	D.O	-	Normal	Active
18	MODEM_DR	D.I	Normal	-	Active	58	STROB2	D.O	-	Normal	Active
19	EEPROM_CS	D.O	Non Active	-	Active	59	STROB3	D.O	-	Normal	Active
20	EXIO1_CS	D.O	Change	-	Latch	60	STROB4	D.O	-	Normal	Active
21	EXIO2_CS	D.O	Change	-	Latch	61	STROB5	D.O	-	Normal	Active
22	CID_LINESW	D.O	LINE1	-	LINE2	62	TEST_MODE	D.I	Normal	-	TEST
23	CAS/FSK_CTRL	D.O	Call wait	-	Normal CID	63	AC_DOWN	D.I	Normal	-	AC_DOWN
24	DTMF_SW	D.O	L1 or L2	-	L1/L2	64	STOP	D.I	Normal	-	STOP
25	BEEP/RINGER	D.O	Active	-	Active	65	L2HOLD_RLY	D.O	OFF	-	ON
26	XSW_CS	D.O	Change	-	Latch	66	L2_RLY	D.O	OFF	-	ON
27	Vss	-	-	-	Fix	67	L1HOLD_RLY	D.O	OFF	-	ON
28	Vcc	-	Fix	-	-	68	L1_RLY	D.O	OFF	-	ON
29	CSS_DET_L1	D.I	Normal	-	Signal input	69	SP_CS	D.O	OFF	-	ON
30	CSS_DET_L2	D.I	Normal	-	Signal input	70	TONE_IN	D.I	Normal	-	TONE
31	ICM_TXDATA	D.O	Active	-	Active	71	HEADSET_DET	D.I	HeadSet_ON	-	HeadSet_OFF
32	ICM_RXDATA	D.I	Active	-	Active	72	HOOK_DET	D.I	ON_HOOK	-	OFF_HOOK
33	LCD_D4	D.I/O	Active	-	Active	73	BATTLOW_DET	D.I	Normal	-	Batt_Low
34	LCD_D5	D.I/O	Active	-	Active	74	NC	D.O	-	-	Fix
35	LCD_D6	D.I/O	Active	-	Active	75	DTMF_OUT	D.O	Active	-	Active
36	LCD_D7	D.I/O	Active	-	Active	76	Vtref	-	-	-	-
37	LCD_E	D.O	Active	-	Active/Normal	77	Avcc	-	-	-	-
38	LCD_CS	D.O	Non Active	-	Active	78	L2_EXHOOK	D.I	ON->OFF HOOK	-	Normal
39	LCD_DC	D.O	Data	-	Command	79	L1_EXHOOK	D.I	ON->OFF HOOK	-	Normal
40	LCD_R/W	D.O	Read	-	Write	80	L2_BELLIN	D.I	Normal	-	Bell

## 15. CABINET AND ELECTRICAL PARTS LOCATION



Ref.No.	Part No.	Figure
A	XTW26+12P	 2.6 $\phi$ $\times$ 12mm
B	XTW26+8P	 2.6 $\phi$ $\times$ 8mm

## 16. ACCESSORIES AND PACKING MATERIALS



## 17. HOW TO REPLACE FLAT PACKAGE IC

### 17.1. Preparation

#### - SOLDER

Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA

#### - Soldering iron

Recommended power consumption will be between 30 W to 40 W.

Temperature of Copper Rod  $662 \pm 50^{\circ}\text{F}$  ( $350 \pm 10^{\circ}\text{C}$ )

(An expert may handle between 60 ~ 80 W iron, but beginner might damage foil by overheating.)

#### - Flux

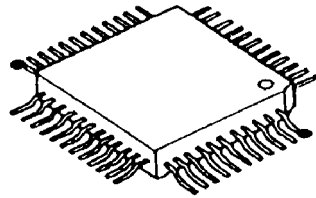
HI115 Specific gravity 0.863

(Original flux will be replaced daily.)

### 17.2. Procedure

1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.

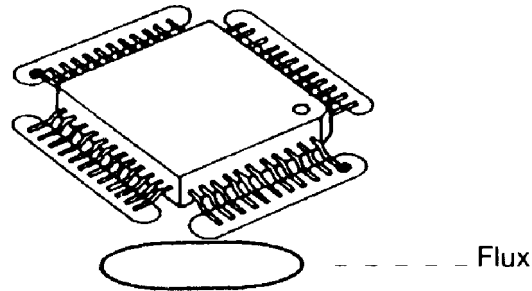




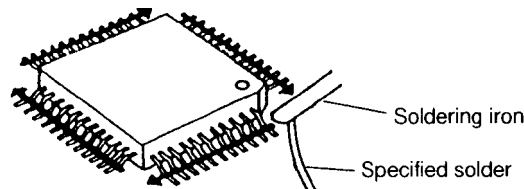
● - - - - - Temporary soldering point.

Be certain each pin is located over the correct pad on the PCB.

## 2. Apply flux to all of the pins on the IC.

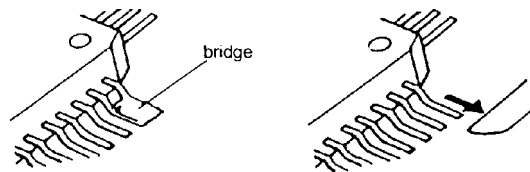


3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.

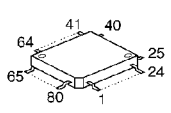
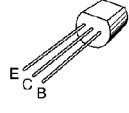
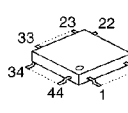
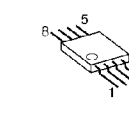
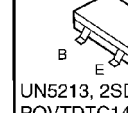
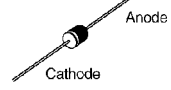
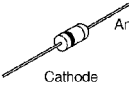
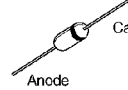
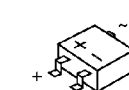
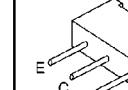
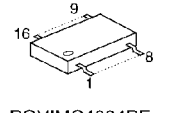
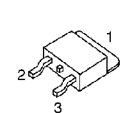
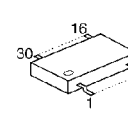
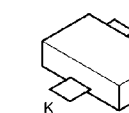
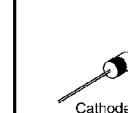
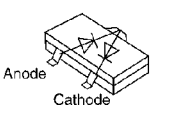
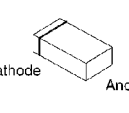
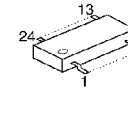
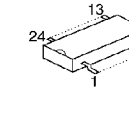
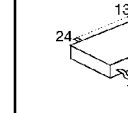
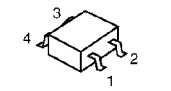
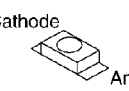
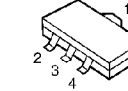
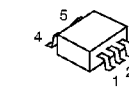


## 17.3. Modification Procedure of Bridge

1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.



## 18. TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

 C2CBGF000152	 2SC2120, 2SA1625 2SC2235, 2SA1576S	 PQVIXLA8231K	 PQVINJM2904F PQWITS3282BH	 UN5213, 2SD1819A PQVTDTC144TU PQVTFB1J3P, UN5113 PQVTD143Z106
 1SS119	 MA4062, MA4180	 PQVDMZJ5R1C MA723	 PQVDS1ZB60F1	 2SC4645EAN
 PQVIMC4094BF PQVITC4053BF PQVIBU8244F	 PQVIBA78M08F	 PQVISC77655V	 PQVDKV15602	 PQVD1T4R1T
 MA153	 MA111	 C0HBZ0000038	 PQVIMT8843AS	 C0JBAZ0000788
 PQVIPS3327UT	 PSVD1SRCT	 PQVIXCF3002P	 PQVIPS3238NT	

## 19. REPLACEMENT PARTS LIST

Note:

### 1. RTL (Retention Time Limited)

**Note :** The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is depends on the type of assembly, and in accordance with the laws governing parts and product retention.

After end of this period, the assembly will no longer be available.

### 2. Important safety notice

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

## 5. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (  $\Omega$  ) K=1000  $\Omega$  , M=1000k  $\Omega$

All capacitors are in MICRO FARADS (  $\mu$  F) P=  $\mu$   $\mu$  F

\*Type & Wattage of Resistor

Type					
ERC:Solid		ERX:Metal Film		PQ4R:Carbon	
ERD:Carbon		ERG:Metal Oxide		ERS:Fusible Resistor	
PQRD:Carbon		ERQ:Metal Film		ERF:Cement Resistor	
Wattage					
10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W
*Type & Voltage of Capacitor					
Type					
ECFD:Semi-Conductor		ECCD,ECKD,ECBT,PQCBC : Ceramic			
ECQS:Styrol		ECQE,ECQV,ECQG : Polyester			
PQCUV:Chip		ECEA,ECSZ : Electrolytic			
ECQMS:Mica		ECQP : Polypropylene			
Voltage					
ECQ Type	ECQG ECQV Type	ECSZ Type	Others		
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V	
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V	
2E:250V	2:200V	1V:35V	1C :16V	1J :63V	
2H:500V		0J:6.3V	1E,25:25V	2A :100V	

## 19.1. Unit

### 19.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
<u>1</u>	PQAS57P03Z	SPEAKER	
<u>2</u>	PQBC10374Z2	BUTTON, SP-PHONE KEY	ABS-HB
<u>3</u>	PQBX10366Z2	BUTTON, 17KEY	ABS-HB
<u>4</u>	PQBH10039Z2	BUTTON, HOOK	ABS-HB
<u>5</u>	PQBX10365Z2	BUTTON, 15KEY	ABS-HB
<u>6</u>	PQBX10367Z2	BUTTON, 9KEY	ABS-HB
<u>7</u>	PQGP10224Z1	PANEL, LCD	PC-HB
<u>8</u>	PQGT16080Z	NAME PLATE	
<u>9</u>	PQHG10681Z	RUBBER PARTS, SHEET	
<u>10</u>	PQHG10682Z	RUBBER PARTS, SHEET	
<u>11</u>	PQHG10670Z	RUBBER PARTS, SHEET	
<u>12</u>	PQHG10674Z	RUBBER PARTS, SHEET	
<u>13</u>	PQJC10044Z	BATTERY TERMINAL (+)	
<u>14</u>	PQJC10045Z	BATTERY TERMINAL (-)	
<u>15</u>	PQJC313Y	BATTERY TERMINAL (+)(-)	
<u>16</u>	PQJC314Y	BATTERY TERMINAL (-)(+)	
<u>17</u>	PQJE10091Z	LEAD WIRE, FFC	
<u>18</u>	PQKE10070Z1	GUIDE, H/S	ABS-HB
<u>19</u>	PQKK10105Y2	RLID, BATTERY	ABS-HB
<u>20</u>	PQKM10581W2	CABINET BODY	PS-HB
<u>21</u>	PQMG10025Z	RUBBER PARTS, MICROPHONE	
<u>22</u>	PQSX10222Z	KEYBOARD SWITCH, 15KEY	
<u>23</u>	PQSX10223Z	KEYBOARD SWITCH, 27KEY	
<u>24</u>	PQYF10559Y2	CABINET COVER	PS-HB
<u>25</u>	PQYL10010Z2	STAND, WALL MOUNT ADAPTOR	PS-HB
<u>26</u>	PQGD10166Z	CARD, TELEPHONE	
<u>27</u>	PQGV10043Z	TRANSPARENT PLATE, TEL COVER COVER	
<u>28</u>	PQHS10563Z	FELT PARTS, TAPE	
<u>29</u>	PQXDZLDRS1	LABEL, SECURITY TAG	
<u>30</u>	PQQT22436Z	LABEL, FFC CAUTION	
<u>31</u>	PQHS10600Z	FELT PARTS, TAPE	

### 19.1.2. Main P.C. Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
<b>PCB1</b>	<b>PQWP1TS3282B</b>	<b>MAIN P.C.BOARD ASS'Y (RTL)</b>	
		(ICS)	
IC101	PQVINJM2904F	IC	S
IC201	PQVINJM2904F	IC	S
IC301	PQVIBU8244F	IC	S
IC302	PQVIMC4094BF	IC	S
IC304	PQVIXCF3002P	IC	
IC401	PQVISC77655V	IC	S
IC502	PQVIMT8843AS	IC	
IC503	PQVITC4053BF	IC	S
IC601	PQVIPS3238NT	IC	S
IC602	PQVIPS327UT	IC	
IC603	PQVIBA78M08F	IC	S
IC701	PQVIXLA8231K	IC	S
IC801	C2CBGF000152	IC	
IC802	PQWITS3282BH	IC	
IC806	C0JBAZ000788	IC	
		(TRANSISTORS)	
Q101	2SD1819A	TRANSISTOR(SI)	
Q102	UN5213	TRANSISTOR(SI)	S
Q130	2SA1625	TRANSISTOR(SI)	S
Q131	2SC4645EAN	TRANSISTOR(SI)	S
Q132	2SA1625	TRANSISTOR(SI)	S
Q133	2SC4645EAN	TRANSISTOR(SI)	S
Q134	2SC2120	TRANSISTOR(SI)	S
Q135	2SD1819A	TRANSISTOR(SI)	
Q153	2SA1576S	TRANSISTOR(SI)	S
Q154	2SD1819A	TRANSISTOR(SI)	
Q155	2SC2120	TRANSISTOR(SI)	S
Q156	2SD1819A	TRANSISTOR(SI)	
Q201	2SD1819A	TRANSISTOR(SI)	
Q230	2SA1625	TRANSISTOR(SI)	S
Q231	2SC4645EAN	TRANSISTOR(SI)	S
Q232	2SA1625	TRANSISTOR(SI)	S
Q233	2SC4645EAN	TRANSISTOR(SI)	S
Q234	2SC2120	TRANSISTOR(SI)	S
Q235	2SD1819A	TRANSISTOR(SI)	
Q251	UN5213	TRANSISTOR(SI)	S
Q300	2SD1819A	TRANSISTOR(SI)	
Q301	2SD1819A	TRANSISTOR(SI)	
Q302	PQVTFB1J3P	TRANSISTOR(SI)	S
Q303	2SD1819A	TRANSISTOR(SI)	
Q350	PQVTD143Z106	TRANSISTOR(SI)	S
Q351	UN5213	TRANSISTOR(SI)	S
Q352	UN5213	TRANSISTOR(SI)	S
Q353	UN5213	TRANSISTOR(SI)	S
Q354	2SD1819A	TRANSISTOR(SI)	
Q355	2SD1819A	TRANSISTOR(SI)	
Q356	PQVTD143Z106	TRANSISTOR(SI)	S
Q410	PQVTD143Z106	TRANSISTOR(SI)	S
Q411	2SD1819A	TRANSISTOR(SI)	
Q420	2SD1819A	TRANSISTOR(SI)	
Q430	UN5213	TRANSISTOR(SI)	S
Q431	UN5213	TRANSISTOR(SI)	S

Ref. No.	Part No.	Part Name & Description	Remarks
Q432	PQVTD143Z106	TRANSISTOR(SI)	S
Q433	PQVTD143Z106	TRANSISTOR(SI)	S
Q434	UN5113	TRANSISTOR(SI)	S
Q450	PQVTD143Z106	TRANSISTOR(SI)	S
Q481	2SD1819A	TRANSISTOR(SI)	
Q482	PQVTD143Z106	TRANSISTOR(SI)	S
Q483	PQVTD143Z106	TRANSISTOR(SI)	S
Q601	2SC2235	TRANSISTOR(SI)	S
Q602	2SD1819A	TRANSISTOR(SI)	
Q701	2SD1819A	TRANSISTOR(SI)	
Q702	2SD1819A	TRANSISTOR(SI)	
Q703	2SD1819A	TRANSISTOR(SI)	
Q704	2SD1819A	TRANSISTOR(SI)	
Q710	2SD1819A	TRANSISTOR(SI)	
Q802	PQVTDTC144TU	TRANSISTOR(SI)	S
		(DIODES)	
D101	PQVDS1ZB60F1	DIODE(SI)	S
D102	MA153	DIODE(SI)	
D103	MA153	DIODE(SI)	
D130	PQVD1T4R1T	DIODE(SI)	
D131	PQVD1T4R1T	DIODE(SI)	
D132	PQVD1T4R1T	DIODE(SI)	
D133	MA4062	DIODE(SI)	
D134	1SS119	DIODE(SI)	S
D150	MA4180	DIODE(SI)	
D152	PQVDMZJ5R1C	DIODE(SI)	S
D153	1SS119	DIODE(SI)	S
D156	1SS119	DIODE(SI)	S
D201	PQVDS1ZB60F1	DIODE(SI)	S
D202	MA153	DIODE(SI)	
D203	MA153	DIODE(SI)	
D230	PQVD1T4R1T	DIODE(SI)	
D231	PQVD1T4R1T	DIODE(SI)	
D232	PQVD1T4R1T	DIODE(SI)	
D233	MA4062	DIODE(SI)	
D234	1SS119	DIODE(SI)	S
D251	1SS119	DIODE(SI)	S
D361	1SS119	DIODE(SI)	S
D362	1SS119	DIODE(SI)	S
D401	1SS119	DIODE(SI)	S
D402	1SS119	DIODE(SI)	S
D452	1SS119	DIODE(SI)	S
D485	1SS119	DIODE(SI)	S
D550	MA111	DIODE(SI)	
D551	MA111	DIODE(SI)	
D601	1SS119	DIODE(SI)	S
D602	MA4062	DIODE(SI)	
D604	PQVD1T4R1T	DIODE(SI)	
D605	MA723	DIODE(SI)	
D612	1SS119	DIODE(SI)	S
D613	1SS119	DIODE(SI)	S
D801	MA111	DIODE(SI)	
DC702	PQVDKV15602	DIODE(SI)	
DC703	PQVDKV15602	DIODE(SI)	

Ref. No.	Part No.	Part Name & Description	Remarks
		(CERAMIC FILTERS)	
BPF701	J0B4553A0059	CERAMIC FILTER	
BPF702	J0B4103A0002	CERAMIC FILTER	
BPF703	J0B3703A0002	CERAMIC FILTER	
		(COILS)	
L101	ELEV101KA	COIL	
L102	PQLQXF330K	COIL	S
L103	PQLQXF330K	COIL	S
L104	PQLQXF330K	COIL	S
L105	PQLQXF330K	COIL	S
L702	PQL07A6	COIL	
L703	PQL07A7	COIL	
T701	PQLE131	COIL	
		(CONNECTORS AND JACKS)	
CN102	PQJS24X54Z	CONNECTOR, FFC	S
CN801	L5DCAGC00001	LIQUID CRYSTAL DISPLAY	
JJ2	PQJJ1T008X	JACK, MODULAR	S
JJ3	PQJJ1T023Y	JACK, MODULAR	S
JJ4	PQJJ1T030Y	JACK, HANDSET	
JJ5	PQJJ1C001Z	JACK, HEADSET	
JJ6	PQJJ1B4Y	JACK, DC	
		(CRYSTAL OSCILLATORS)	
X550	PQVCK3581N9Z	CRYSTAL OSCILLATOR	S
X701	PQVBB455E1	CERAMIC FILTER	S
X702	PQVBB410F	CERAMIC FILTER	S
X703	PQVBB370F	CERAMIC FILTER	S
X801	PQVBCST80MG6	CRYSTAL OSCILLATOR	S
X802	PQVCL3276N6Z	CRYSTAL OSCILLATOR	S
		(PHOTO ELECTRIC TRANSDUCERS)	
PC1	PQVITLP521	PHOTO COUPLER	
PC2	PQVITLP521	PHOTO COUPLER	
PC3	PQVITLP627	PHOTO COUPLER	S
PC4	PQVITLP627	PHOTO COUPLER	S
PC5	0N3181	PHOTO COUPLER	
PC6	0N3181	PHOTO COUPLER	
PC7	PQVITLP627	PHOTO COUPLER	S
PC8	PQVITLP627	PHOTO COUPLER	S
		(THERMISTORS)	
POS1	PQRPAP390N	POSISTOR	S
POS2	PQRPAP390N	POSISTOR	S
		(VARISTORS)	
SA1	PQVDDSS301L	SURGE ABSORBER	S
SA2	PQVDDSS301L	SURGE ABSORBER	S
SA3	PQVDDSS301L	SURGE ABSORBER	S
SA4	PQVDDSS301L	SURGE ABSORBER	S
		(RESISTORS)	
R102	PQ4R10XJ473	47K	S
R110	PQ4R10XJ225	2.2M	S
R111	ERJ3GEYJ823	82K	
R112	ERJ3GEYJ823	82K	
R114	ERJ3GEYJ153	15K	
R115	ERJ3GEYJ103	10K	
R116	ERJ3GEYJ563	56K	
R117	ERJ3GEYJ474	470K	

Ref. No.	Part No.	Part Name & Description	Remarks
R118	ERJ3GEYJ562	5.6K	
R119	ERJ3GEYJ275	2.7M	
R120	ERJ3GEYJ563	56K	
R121	PQ4R10XJ225	2.2M	S
R122	ERJ3GEYJ684	680K	
R123	ERJ3GEYJ104	100K	
R124	ERJ3GEYJ103	10K	
R125	ERJ3GEYJ680	68	
R126	ERJ3GEYJ272	2.7K	
R127	ERJ3GEYJ333	33K	
R130	ERJ3GEYJ104	100K	
R131	ERJ3GEYJ102	1K	
R132	PQ4R18XJ472	4.7K	S
R133	PQ4R18XJ104	100K	S
R134	ERJ3GEYJ104	100K	
R135	ERJ3GEYJ102	1K	
R136	PQ4R18XJ472	4.7K	S
R137	PQ4R18XJ104	100K	S
R138	PQ4R18XJ681	680	S
R139	ERJ3GEY0R00	0	
R140	ERJ3GEYJ273	27K	
R141	ERJ3GEYJ272	2.7K	
R142	ERJ3GEYJ104	100K	
R143	ERJ3GEYJ152	1.5K	
R144	ERJ3GEYJ682	6.8K	
R145	ERJ3GEYJ223	22K	
R154	PQ4R18XJ100	10	S
R155	ERJ3GEYJ101	100	
R156	ERDS1TJ101	100	S
R157	ERJ3GEYJ472	4.7K	
R158	ERJ3GEYJ472	4.7K	
R159	ERJ3GEYJ472	4.7K	
R160	PQ4R10XJ102	1K	S
R161	ERJ3GEYJ153	15K	
R163	PQ4R18XJ150	15	S
R164	ERJ3GEYJ330	33	
R165	ERJ3GEYJ821	820	
R166	ERJ3GEYJ102	1K	
R167	ERJ3GEYJ332	3.3K	
R168	ERJ3GEYJ394	390K	
R169	ERJ3GEYJ272	2.7K	
R170	ERJ3GEYJ101	100	
R171	PQ4R18XJ100	10	S
R172	PQ4R10XJ100	10	S
R175	PQ4R10XJ102	1K	S
R180	ERJ3GEYJ102	1K	
R202	PQ4R10XJ473	47K	S
R210	PQ4R10XJ225	2.2M	S
R211	ERJ3GEYJ823	82K	
R212	ERJ3GEYJ823	82K	
R214	ERJ3GEYJ153	15K	
R215	ERJ3GEYJ103	10K	
R216	ERJ3GEYJ563	56K	
R217	ERJ3GEYJ474	470K	



Ref. No.	Part No.	Part Name & Description	Remarks
R218	ERJ3GEYJ562	5.6K	
R219	ERJ3GEYJ275	2.7M	
R220	ERJ3GEYJ563	56K	
R221	PQ4R10XJ225	2.2M	S
R222	ERJ3GEYJ684	680K	
R223	ERJ3GEYJ104	100K	
R224	ERJ3GEYJ103	10K	
R225	ERJ3GEYJ680	68	
R226	ERJ3GEYJ272	2.7K	
R227	ERJ3GEYJ333	33K	
R230	ERJ3GEYJ104	100K	
R231	ERJ3GEYJ102	1K	
R232	PQ4R18XJ472	4.7K	S
R233	PQ4R18XJ104	100K	S
R234	ERJ3GEYJ104	100K	
R235	ERJ3GEYJ102	1K	
R236	PQ4R18XJ472	4.7K	S
R237	PQ4R18XJ104	100K	S
R238	PQ4R18XJ681	680	S
R239	ERJ3GEY0R00	0	
R240	ERJ3GEYJ273	27K	
R241	ERJ3GEYJ272	2.7K	
R242	ERJ3GEYJ104	100K	
R243	ERJ3GEYJ152	1.5K	
R244	ERJ3GEYJ682	6.8K	
R245	ERJ3GEYJ223	22K	
R259	ERJ3GEYJ183	18K	
R300	ERJ3GEYJ472	4.7K	
R301	PQ4R18XJ100	10	S
R310	PQ4R18XJ100	10	S
R311	ERJ3GEYJ104	100K	
R312	ERJ3GEYJ272	2.7K	
R313	ERJ3GEYJ564	560K	
R314	ERJ3GEYJ102	1K	
R315	ERJ3GEYJ474	470K	
R316	ERJ3GEYJ103	10K	
R317	ERJ3GEYJ272	2.7K	
R318	ERJ3GEYJ394	390K	
R319	ERJ3GEYJ473	47K	
R320	ERJ3GEYJ101	100	
R321	ERJ3GEYJ103	10K	
R322	ERJ3GEYJ153	15K	
R323	ERJ3GEYJ334	330K	
R324	ERJ3GEYJ223	22K	
R325	ERJ3GEYJ103	10K	
R326	ERJ3GEYJ222	2.2K	
R327	ERJ3GEYJ104	100K	
R328	ERJ3GEYJ473	47K	
R329	ERJ3GEYJ104	100K	
R350	ERJ3GEYJ183	18K	
R351	ERJ3GEYJ822	8.2K	
R352	ERJ3GEYJ332	3.3K	
R353	ERJ3GEYJ392	3.9K	
R354	ERJ3GEYJ273	27K	

Ref. No.	Part No.	Part Name & Description	Remarks
R355	ERJ3GEYJ823	82K	
R356	ERJ3GEYJ393	39K	
R357	ERJ3GEYJ183	18K	
R358	ERJ3GEYJ272	2.7K	
R359	ERJ3GEYJ394	390K	
R360	ERJ3GEYJ472	4.7K	
R361	ERJ3GEYJ563	56K	
R362	ERJ3GEYJ102	1K	
R363	ERJ3GEY0R00	0	
R364	ERJ3GEYJ473	47K	
R365	ERJ3GEYJ224	220K	
R366	ERJ3GEYJ680	68	
R368	ERJ3GEYJ104	100K	
R369	ERJ3GEYJ683	68K	
R370	ERJ3GEY0R00	0	
R371	ERJ3GEYJ103	10K	
R372	ERJ3GEYJ103	10K	
R373	ERJ3GEYJ334	330K	
R382	ERJ3GEYJ334	330K	
R400	PQ4R18XJ100	10	S
R410	PQ4R10XJ100	10	S
R411	ERJ3GEYJ123	12K	
R413	ERJ3GEYJ472	4.7K	
R414	ERJ3GEYJ564	560K	
R415	ERJ3GEYJ561	560	
R416	ERJ3GEYJ123	12K	
R417	ERJ3GEYJ104	100K	
R420	ERJ3GEYJ272	2.7K	
R421	ERJ3GEYJ564	560K	
R422	ERJ3GEYJ184	180K	
R423	ERJ3GEYJ102	1K	
R425	ERJ3GEYJ104	100K	
R428	ERJ3GEYJ104	100K	
R430	ERJ3GEYJ562	5.6K	
R431	ERJ3GEYJ222	2.2K	
R432	ERJ3GEYJ683	68K	
R433	ERJ3GEYJ103	10K	
R434	ERJ3GEYJ103	10K	
R435	ERJ3GEYJ104	100K	
R437	ERJ3GEYJ154	150K	
R438	ERJ3GEYJ103	10K	
R439	ERJ3GEYJ154	150K	
R441	ERJ3GEYJ222	2.2K	
R442	ERJ3GEYJ104	100K	
R448	ERJ3GEYJ104	100K	
R451	ERJ3GEYJ303	30K	
R452	ERJ3GEYJ683	68K	
R453	ERJ3GEYJ392	3.9K	
R454	ERJ3GEYJ225	2.2M	
R455	ERJ3GEYJ275	2.7M	
R456	ERJ3GEYJ122	1.2K	
R457	ERJ3GEYJ472	4.7K	
R458	ERJ3GEYJ104	100K	
R459	ERJ3GEYJ562	5.6K	

Ref. No.	Part No.	Part Name & Description	Remarks
R460	ERJ3GEYJ183	18K	
R461	ERJ3GEYJ332	3.3K	
R462	ERJ3GEYJ104	100K	
R463	ERJ3GEYJ472	4.7K	
R464	ERJ3GEYJ104	100K	
R465	ERJ3GEYJ222	2.2K	
R466	ERJ3GEYJ223	22K	
R481	PQ4R10XJ100	10	S
R482	ERJ3GEY0R00	0	
R483	ERJ3GEYJ473	47K	
R484	PQ4R10XJ471	470	S
R508	ERJ3GEYJ104	100K	
R539	PQ4R18XJ100	10	S
R550	ERJ3GEYJ473	47K	
R551	ERJ3GEYJ103	10K	
R552	ERJ3GEYJ103	10K	
R553	ERJ3GEYJ103	10K	
R554	ERJ3GEYJ104	100K	
R555	ERJ3GEYJ474	470K	
R556	ERJ3GEYJ394	390K	
R557	ERJ3GEYJ103	10K	
R558	ERJ3GEYJ104	100K	
R559	ERJ3GEYJ334	330K	
R560	ERJ3GEYJ105	1M	
R602	ERJ3GEYJ102	1K	
R603	ERJ3GEYJ473	47K	
R610	ERJ3GEYJ104	100K	
R611	ERJ3GEYJ223	22K	
R612	ERJ3GEYJ104	100K	
R613	ERJ3GEYJ104	100K	
R618	ERJ3GEYJ684	680K	
R650	ERJ3GEYJ473	47K	
R651	ERJ3GEYJ473	47K	
R652	ERJ3GEYJ473	47K	
R653	ERJ3GEYJ123	12K	
R654	ERJ3GEYJ123	12K	
R710	ERJ3GEYJ333	33K	
R711	ERJ3GEYJ473	47K	
R712	ERJ3GEYJ331	330	
R713	ERJ3GEYJ152	1.5K	
R714	ERJ3GEYJ152	1.5K	
R715	ERJ3GEYJ472	4.7K	
R716	ERJ3GEYJ222	2.2K	
R717	ERJ3GEYJ152	1.5K	
R718	ERJ3GEYJ152	1.5K	
R719	ERJ3GEYJ221	220	
R720	ERJ3GEYJ182	1.8K	
R721	ERJ3GEYJ104	100K	
R722	ERJ3GEYJ471	470	
R723	ERJ3GEYJ152	1.5K	
R724	ERJ3GEYJ182	1.8K	
R725	ERJ3GEYJ152	1.5K	
R726	ERJ3GEYJ104	100K	
R727	ERJ3GEYJ471	470	

Ref. No.	Part No.	Part Name & Description	Remarks
R728	ERJ3GEYJ103	10K	
R729	ERJ3GEYJ103	10K	
R730	ERJ3GEYJ222	2.2K	
R731	ERJ3GEYJ823	82K	
R732	ERJ3GEYJ103	10K	
R733	ERJ3GEYJ104	100K	
R734	ERJ3GEYJ123	12K	
R735	ERJ3GEYJ331	330	
R736	ERJ3GEYJ273	27K	
R737	ERJ3GEYJ470	47	
R738	ERJ3GEYJ103	10K	
R739	ERJ3GEYJ123	12K	
R740	ERJ3GEYJ123	12K	
R741	ERJ3GEYJ473	47K	
R742	ERJ3GEYJ224	220K	
R744	ERJ3GEYJ183	18K	
R745	ERJ3GEYJ103	10K	
R746	ERJ3GEYJ183	18K	
R747	ERJ3GEYJ104	100K	
R770	ERJ3GEYJ473	47K	
R781	ERJ3GEYJ472	4.7K	
R782	ERJ3GEYJ152	1.5K	
R783	ERJ3GEYJ394	390K	
R784	ERJ3GEYJ151	150	
R785	ERJ3GEYJ823	82K	
R790	ERJ3GEYJ223	22K	
R800	ERJ3GEYJ105	1M	
R801	ERJ3GEY0R00	0	
R802	ERJ3GEYJ104	100K	
R803	ERJ3GEYJ104	100K	
R804	ERJ3GEYJ222	2.2K	
R805	ERJ3GEYJ222	2.2K	
R806	ERJ3GEYJ222	2.2K	
R807	ERJ3GEYJ222	2.2K	
R808	ERJ3GEYJ106	10M	
R809	ERJ3GEYJ104	100K	
R810	ERJ3GEYJ222	2.2K	
R811	ERJ3GEYJ222	2.2K	
R812	ERJ3GEYJ222	2.2K	
R813	ERJ3GEYJ222	2.2K	
R814	ERJ3GEYJ472	4.7K	
R815	ERJ3GEYJ472	4.7K	
R816	ERJ3GEYJ472	4.7K	
R817	ERJ3GEYJ472	4.7K	
R818	ERJ3GEYJ222	2.2K	
R819	ERJ3GEYJ472	4.7K	
R821	ERJ3GEYJ104	100K	
R822	ERJ3GEYJ104	100K	
R823	ERJ3GEYJ104	100K	
R824	ERJ3GEYJ104	100K	
R825	ERJ3GEYJ104	100K	
R826	ERJ3GEYJ104	100K	
R827	ERJ3GEYJ104	100K	
R828	ERJ3GEYJ104	100K	

Ref. No.	Part No.	Part Name & Description	Remarks
R830	ERJ3GEYJ104	100K	
R831	ERJ3GEYJ104	100K	
R832	ERJ3GEYJ104	100K	
R833	ERJ3GEYJ104	100K	
R834	ERJ3GEYJ104	100K	
R835	ERJ3GEYJ104	100K	
R836	ERJ3GEYJ104	100K	
R837	ERJ3GEYJ104	100K	
R840	ERJ3GEY0R00	0	
R841	ERJ3GEYJ104	100K	
R846	ERJ3GEY0R00	0	
R847	PQ4R18XJ100	10	S
J302	PQ4R18XJ000	0	S
		(CAPACITORS)	
C101	ECQE2224KF	0.22	
C102	ECKT2H152KB	0.0015	S
C103	ECKT2H152KB	0.0015	S
C110	ECUV2H681KB	680P	
C111	ECUV2H681KB	680P	
C112	ECEA0JKS101	100	
C114	ECUV1C683KBV	0.068	
C115	ECUV1H152KBV	0.0015	
C116	ECUV1H221JCV	220P	S
C117	ECEA1HKS2R2	2.2	S
C130	ECUV1C104KBV	0.1	
C132	ECUV1C104KBV	0.1	
C134	ECEA1CKS100	10	
C135	ECEA1CK101	100	S
C136	ECEA1HKS010	1	
C150	ECUV1H103KBV	0.01	
C151	ECEA1CKS100	10	
C152	ECEA1CKS100	10	
C154	ECEA1CKA470	47	
C155	ECUV1C393KBV	0.039	
C156	ECUV1A105KBV	1	
C157	ECUV1A224KBV	0.22	
C158	ECUV1H151JCV	150P	
C159	ECEA0JKS470	47	
C160	ECEA0JSJ331	330	S
C180	ECUV1C473KBV	0.047	
C201	ECQE2224KF	0.22	
C202	ECKT2H152KB	0.0015	S
C203	ECKT2H152KB	0.0015	S
C209	ECUV1E223KBV	0.022	
C210	ECUV2H681KB	680P	
C211	ECUV2H681KB	680P	
C212	ECEA1AU101	100	S
C214	ECUV1C683KBV	0.068	
C215	ECUV1H152KBV	0.0015	
C216	ECUV1H221JCV	220P	S
C217	ECEA1HKS2R2	2.2	S
C218	ECEA1CKS470	47	S
C230	ECUV1C104KBV	0.1	
C232	ECUV1C104KBV	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C234	ECEA1CKS100	10	
C235	ECEA1EU101	100	S
C236	ECEA1HKS010	1	
C253	ECEA0JKS101	100	
C300	ECUV1H103KBV	0.01	
C301	ECEA1CKA470	47	
C302	ECEA1CKA470	47	
C303	ECUV1C104KBV	0.1	
C304	ECUV1H101JCV	100P	
C305	ECUV1H331JCV	330P	S
C306	ECUV1H472KBV	0.0047	
C307	ECEA0JKA221	220	
C310	ECUV1H103KBV	0.01	
C311	ECUV1H472KBV	0.0047	
C312	ECUV1C273KBV	0.027	
C313	ECUV1H183KBV	0.018	
C350	ECUV1C104KBV	0.1	
C351	ECUV1A224KBV	0.22	
C352	ECUV1A224KBV	0.22	
C353	ECUV1A224KBV	0.22	
C354	ECUV1C104KBV	0.1	
C356	ECUV1C104KBV	0.1	
C358	ECEA1CKA100	10	
C359	ECUV1H472KBV	0.0047	
C360	ECUV1C104KBV	0.1	
C361	ECUV1C104KBV	0.1	
C362	ECUV1C104KBV	0.1	
C363	ECUV1C104KBV	0.1	
C380	ECUV1H101JCV	100P	
C381	ECUV1H221JCV	220P	S
C410	ECUV1H103KBV	0.01	
C411	ECUV1H122KBV	0.0012	
C412	ECUV1H333KBV	0.033	S
C413	ECEA0JKS470	47	
C420	ECUV1H180JCV	18P	
C423	ECUV1C104KBV	0.1	
C428	ECUV1A224KBV	0.22	
C430	ECUV1C104KBV	0.1	
C431	ECUV1H332KBV	0.0033	
C432	ECUV1H182KBV	0.0018	
C433	ECUV1H103KBV	0.01	
C434	ECUV1H103KBV	0.01	
C435	ECUV1C104KBV	0.1	
C446	ECUV1H103KBV	0.01	
C450	ECUV1C393KBV	0.039	
C451	ECUV1H822KBV	0.0082	
C453	ECUV1C473KBV	0.047	
C454	ECUV1C104KBV	0.1	
C455	PQCUV1C105KB	1	
C456	PQCUV1C105KB	1	
C457	ECEA1HKA4R7	4.7	
C458	ECUV1C683KBV	0.068	
C459	ECEA1CKS470	47	S
C460	ECUV1C393KBV	0.039	

Ref. No.	Part No.	Part Name & Description	Remarks
C461	ECUV1C473KBV	0.047	
C462	ECUV1E223KBV	0.022	
C463	ECEA1CKA100	10	
C464	ECEA1HKA4R7	4.7	
C465	ECEA0JKA101	100	
C466	ECEA1AKA101	100	
C467	PQCUV1C105KB	1	
C468	ECUV1C105ZFV	1	
C469	ECEA1AKA101	100	
C470	ECEA1CU471	470	
C471	ECUV1C104KBV	0.1	
C472	ECUV1C104KBV	0.1	
C473	ECUV1H103KBV	0.01	
C481	ECEA0JKA101	100	
C550	ECUV1C104KBV	0.1	
C551	ECUV1C104KBV	0.1	
C552	ECUV1C104KBV	0.1	
C553	ECUV1H103KBV	0.01	
C554	ECUV1C104KBV	0.1	
C555	ECUV1A224KBV	0.22	
C556	ECUV1H330JCV	33P	
C557	ECUV1H330JCV	33P	
C558	ECUV1C473KBV	0.047	
C559	ECUV1C104ZFV	0.1	
C560	ECEA0JSJ331	330	S
C565	ECUV1H271KBV	270P	
C600	ECEA1AKA101	100	
C602	ECEA1EK470	47	S
C603	ECEA1AU101	100	
C604	ECUV1C104ZFV	0.1	
C610	ECUV1H333KBV	0.033	S
C611	ECEA0JU102	1000	
C620	ECUV1C104ZFV	0.1	
C621	ECUV1C104ZFV	0.1	
C622	ECEA1AU221	220	
C624	ECEA0JKS470	47	
C710	ECUV1H222KBV	0.0022	
C711	ECUV1H332KBV	0.0033	
C712	ECUV1E223KBV	0.022	
C713	ECUV1H472KBV	0.0047	
C714	ECUV1H331JCV	330P	S
C715	ECUV1H103KBV	0.01	
C716	ECUV1H103KBV	0.01	
C717	ECKD2H103KB	0.01	S
C718	ECUV1H102KBV	0.001	
C719	ECUV1H332KBV	0.0033	
C720	ECUV1H103KBV	0.01	
C721	ECUV1H103KBV	0.01	
C722	ECUV1H103KBV	0.01	
C723	ECUV1H102KBV	0.001	
C724	ECUV1H332KBV	0.0033	
C725	ECUV1H103KBV	0.01	
C726	ECUV1C104KBV	0.1	
C727	ECUV1H332KBV	0.0033	


Ref. No.	Part No.	Part Name & Description	Remarks
C728	ECUV1C105ZFV	1	
C729	ECUV1H333KBV	0.033	S
C730	ECUV1H272KBV	0.0027	
C731	ECUV1C105ZFV	1	
C732	ECUV1C105ZFV	1	
C733	ECUV1C105ZFV	1	
C734	ECUV1C105ZFV	1	
C735	ECUV1C104KBV	0.1	
C736	ECUV1C105ZFV	1	
C737	ECUV1C105ZFV	1	
C738	ECUV1C105ZFV	1	
C739	ECUV1C105ZFV	1	
C740	ECUV1A154KBV	0.15	
C741	ECUV1H103KBV	0.01	
C742	ECUV1H221JCV	220P	S
C743	ECUV1H221JCV	220P	S
C745	ECUV1H101JCV	100P	
C746	ECUV1H101JCV	100P	
C747	ECUV1H103KBV	0.01	
C749	ECUV1H103KBV	0.01	
C750	ECUV1H101JCV	100P	
C751	ECUV1H222KBV	0.0022	
C752	ECUV1C105ZFV	1	
C779	ECEA0JKS101	100	
C780	ECEA0JSJ331	330	S
C781	ECUV1H152KBV	0.0015	
C782	ECUV1C273KBV	0.027	
C790	ECUV1C104KBV	0.1	
C801	ECUV1H180JCV	18P	
C802	ECUV1H180JCV	18P	
C815	ECUV1H472KBV	0.0047	
C819	ECUV1A106ZF	10	
		(OTHERS)	
E1	PQEFBDB111GF	BUZZER	
E2	PQSH2B105Z	SWITCH, HOOK	

### 19.1.3. Operational P.C.Board



Ref. No.	Part No.	Part Name & Description	Remarks
<b>PCB2</b>	PQWP2TS3282B	OPERATIONAL P.C.BOARD ASS'Y (RTL)	
		(IC)	
IC605	C0HBZ0000038	IC	
		(DIODES)	
D901	PSVD1SRCT	LED	S
D902	PSVD1SRCT	LED	S
D903	PSVD1SRCT	LED	S
D904	PSVD1SRCT	LED	S
D905	PSVD1SRCT	LED	S
D906	PSVD1SRCT	LED	S
D907	PSVD1SRCT	LED	S
D908	PSVD1SRCT	LED	S
D909	PSVD1SRCT	LED	S
D910	PSVD1SRCT	LED	S
D911	PSVD1SRCT	LED	S
D912	PSVD1SRCT	LED	S
		(RESISTORS)	
R901	ERJ3GEYJ182	1.8K	
R902	ERJ3GEYJ182	1.8K	
R903	ERJ3GEYJ182	1.8K	
R904	ERJ3GEYJ122	1.2K	
R905	ERJ3GEYJ222	2.2K	
R906	ERJ3GEYJ222	2.2K	
R907	ERJ3GEYJ222	2.2K	
R908	ERJ3GEYJ222	2.2K	
R909	ERJ3GEYJ222	2.2K	
R910	ERJ3GEYJ222	2.2K	
R911	ERJ3GEYJ222	2.2K	
R912	ERJ3GEYJ222	2.2K	
R913	ERJ3GEYJ123	12K	
J905	PQ4R18XJ000	0	S
		(CAPACITORS)	
C1	ECUV1C104KBV	0.1	
C2	ECUV1C104KBV	0.1	
		(OTHERS)	
<b>E3</b>	PQJM122Z	MICROPHONE	
J901	PQJT10021Z	TERMINAL-TERMINAL PLATE	
J903	PQJT10021Z	TERMINAL-TERMINAL PLATE	
CN105	PQJS24X54Z	CONNECTOR, FFC	S

## 19.2. Accessories and Packing Materials

Ref. No.	Part No.	Part Name & Description	Remarks
<b>A1</b>	KX-TCA1-G	AC ADAPTOR	
<b>A2</b>	PQJA10075Z	CORD, TELEPHONE	
<b>A3</b>	PQJA10088Z	CORD, TELEPHONE	
<b>A4</b>	PQJA212V	CORD, CURL	
<b>A5</b>	PQJXC0401Z	HANDSET	
<b>A6</b>	PQQX13437X	INSTRUCTION BOOK	
<b>A7</b>	PQQW12702Z	QUICK GUIDE (for English)	
<b>A8</b>	PQQW12703Z	QUICK GUIDE (for Spanish)	
<b>A9</b>	PQQW12576Z	LEAFLET, #800	
<b>A10</b>	PQXDDS400-8	LABEL, SECURITY TAG	
<b>A11</b>	PQPD10553Y	CUSHION	
<b>P1</b>	PQPH89Y	PROTECTION COVER	
<b>P2</b>	PQPK14042Z	GIFT BOX	

## 20. FOR SCHEMATIC DIAGRAM (**SCHEMATIC DIAGRAM**)

1. DC voltage measurements are taken with electronic voltmeter from negative terminal.  
(Add 40 mA to telephone line from the loop simulator.)
2. This schematic diagram may be modified at any time with the development of new technology.

Important Safety Notice: / Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer's specified parts.

## 21. SCHEMATIC DIAGRAM

### 21.1. Main

### 21.2. Operation

## 22. CIRCUIT BOARD

### 22.1. Main

#### 22.1.1. Component View

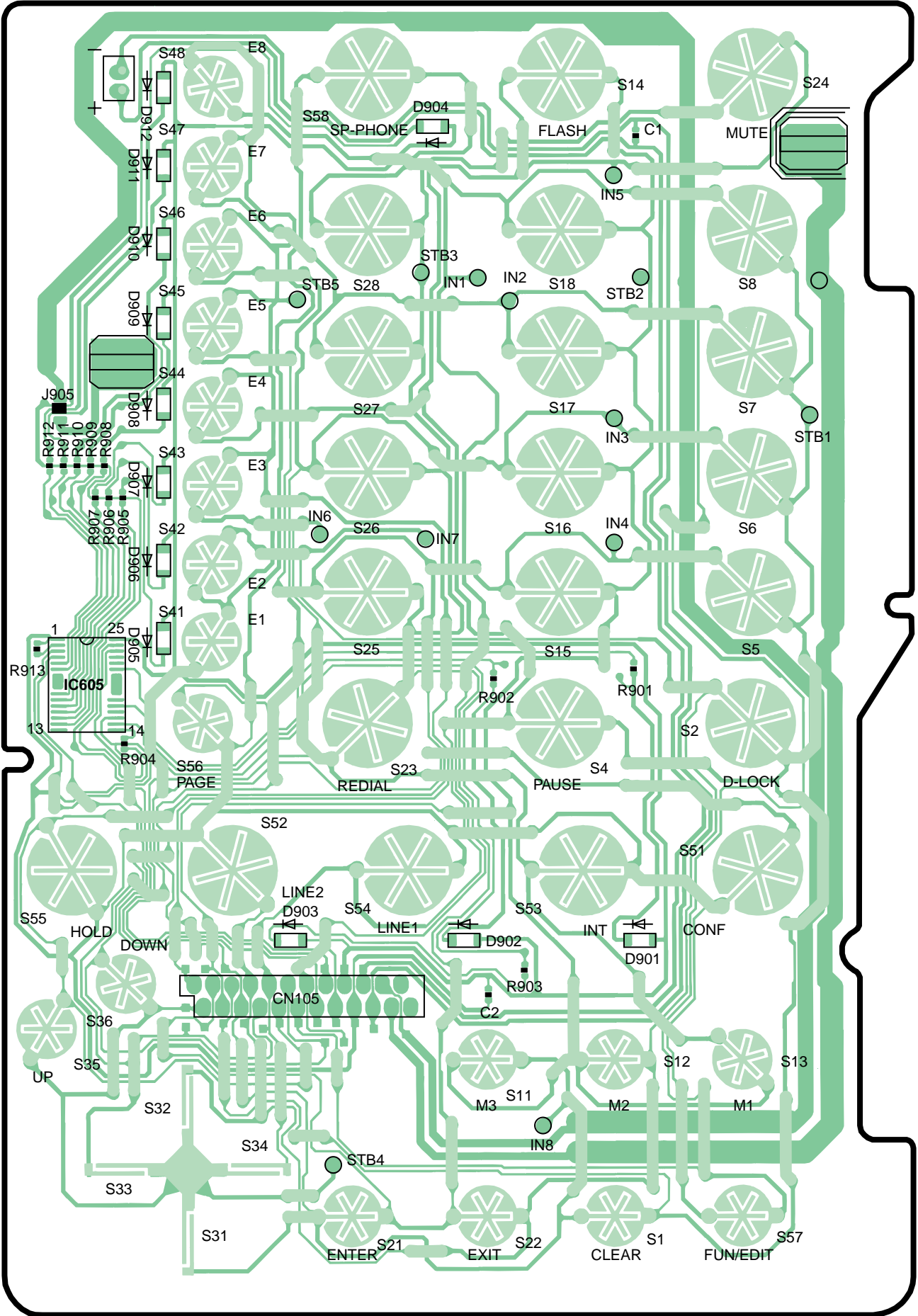
#### 22.1.2. Flow Solder Side View

### 22.2. Operation

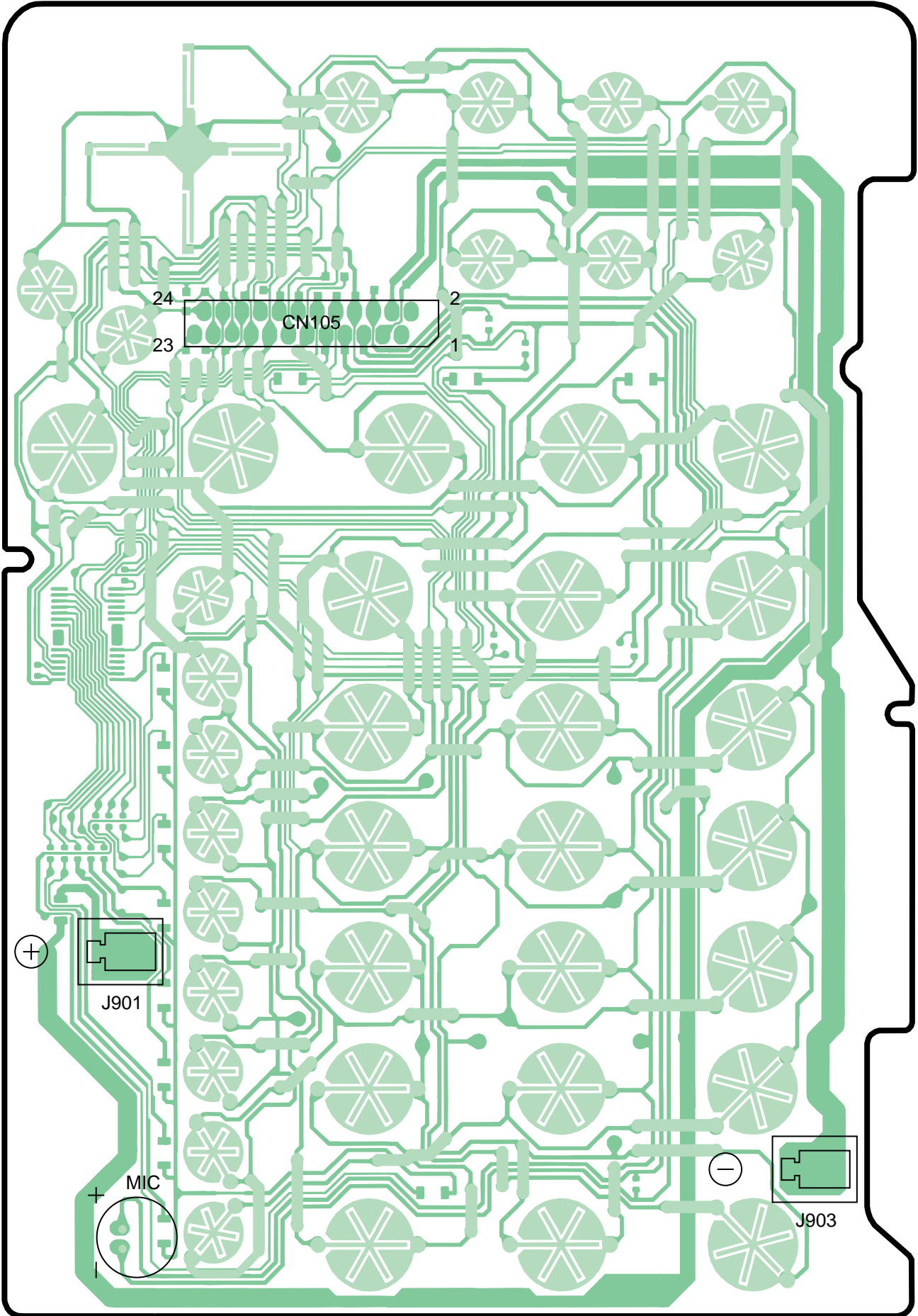
#### 22.2.1. Component View

#### 22.2.2. Flow Solder Side View

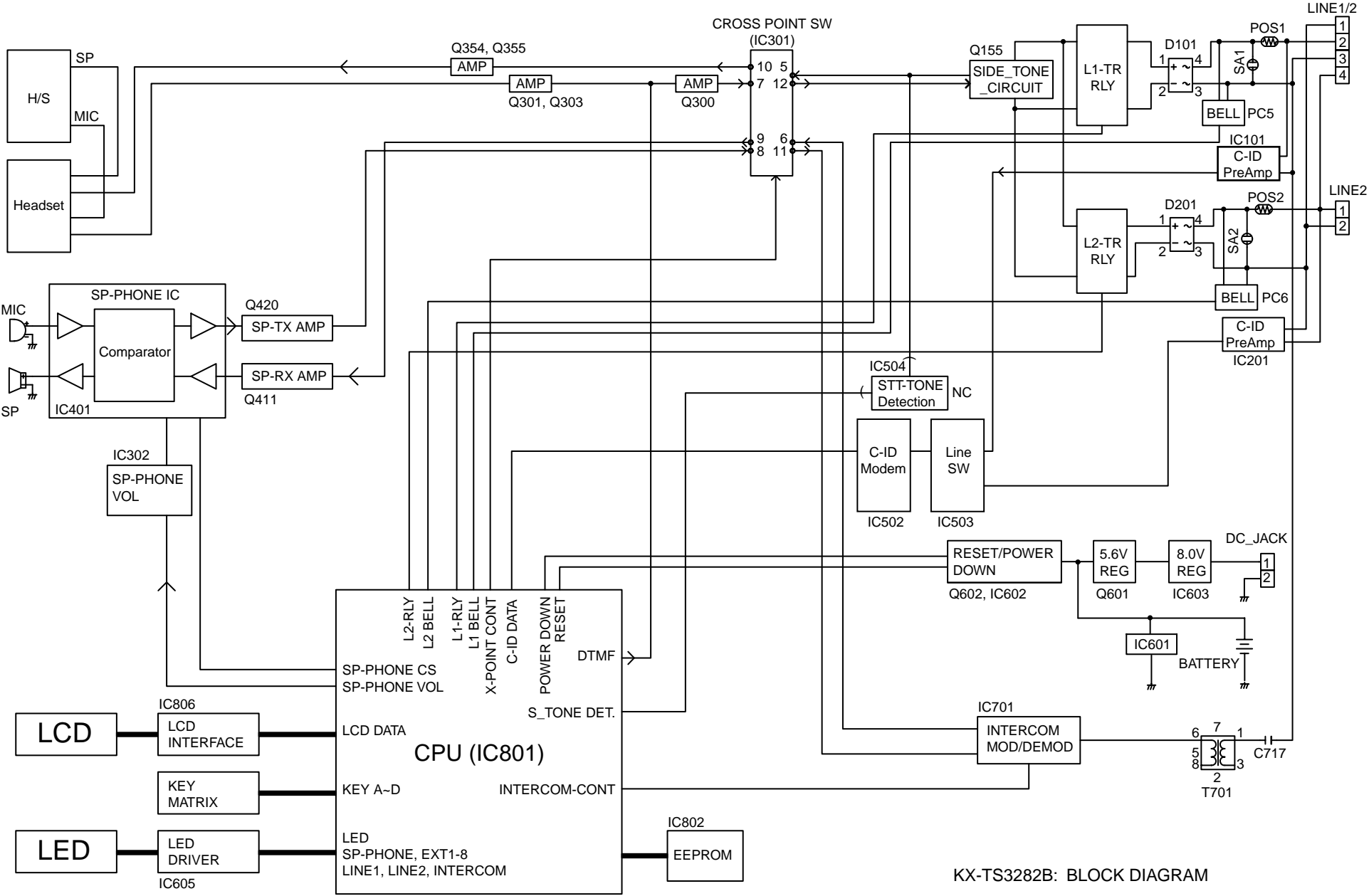
**M / KXTS3282B**

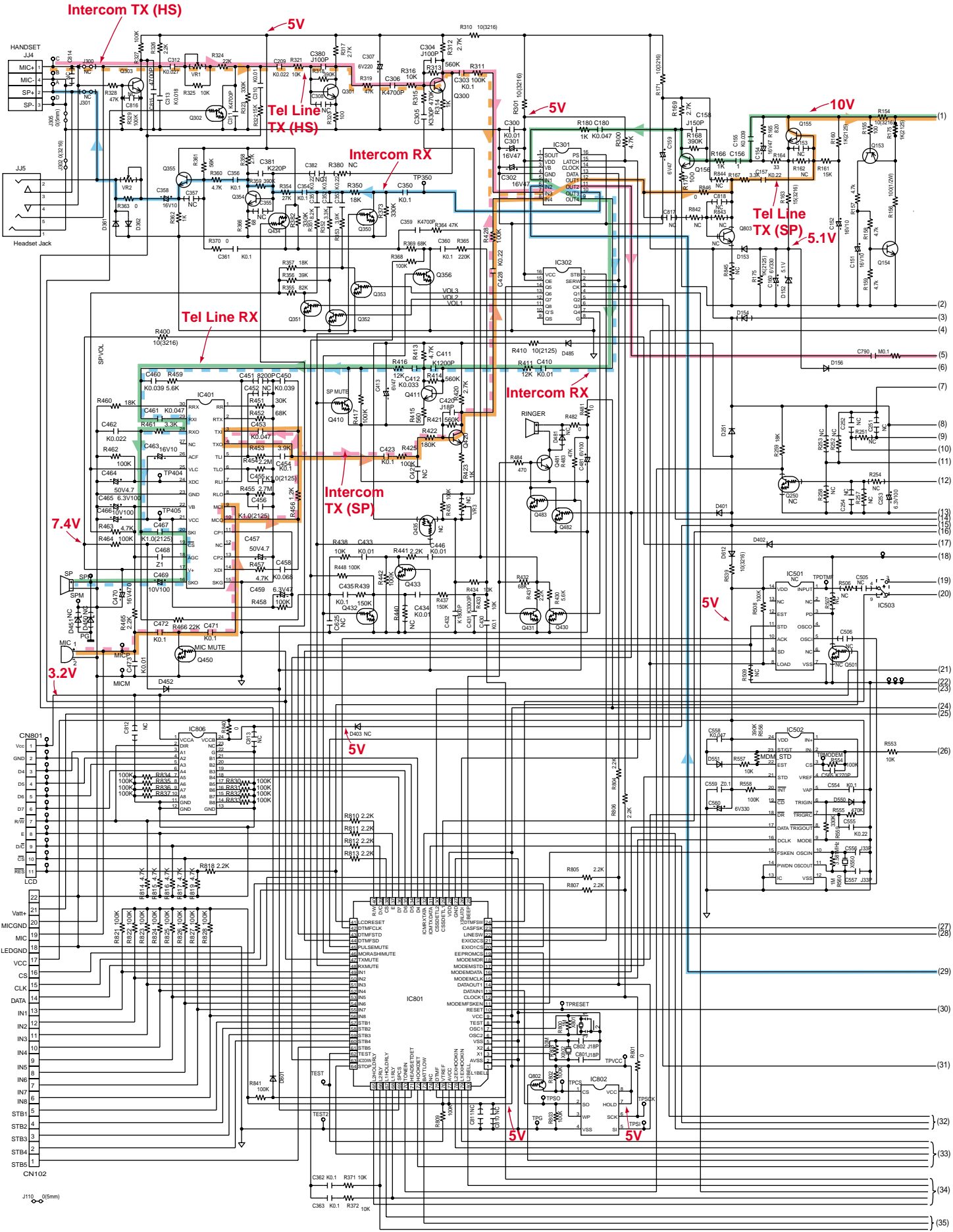


KX-TS3282W CIRCUIT BOARD(Operation)Componet View



KX-TS3282B CIRCUIT BOARD(Operation)Flow Solder Side View





Tel Line RX

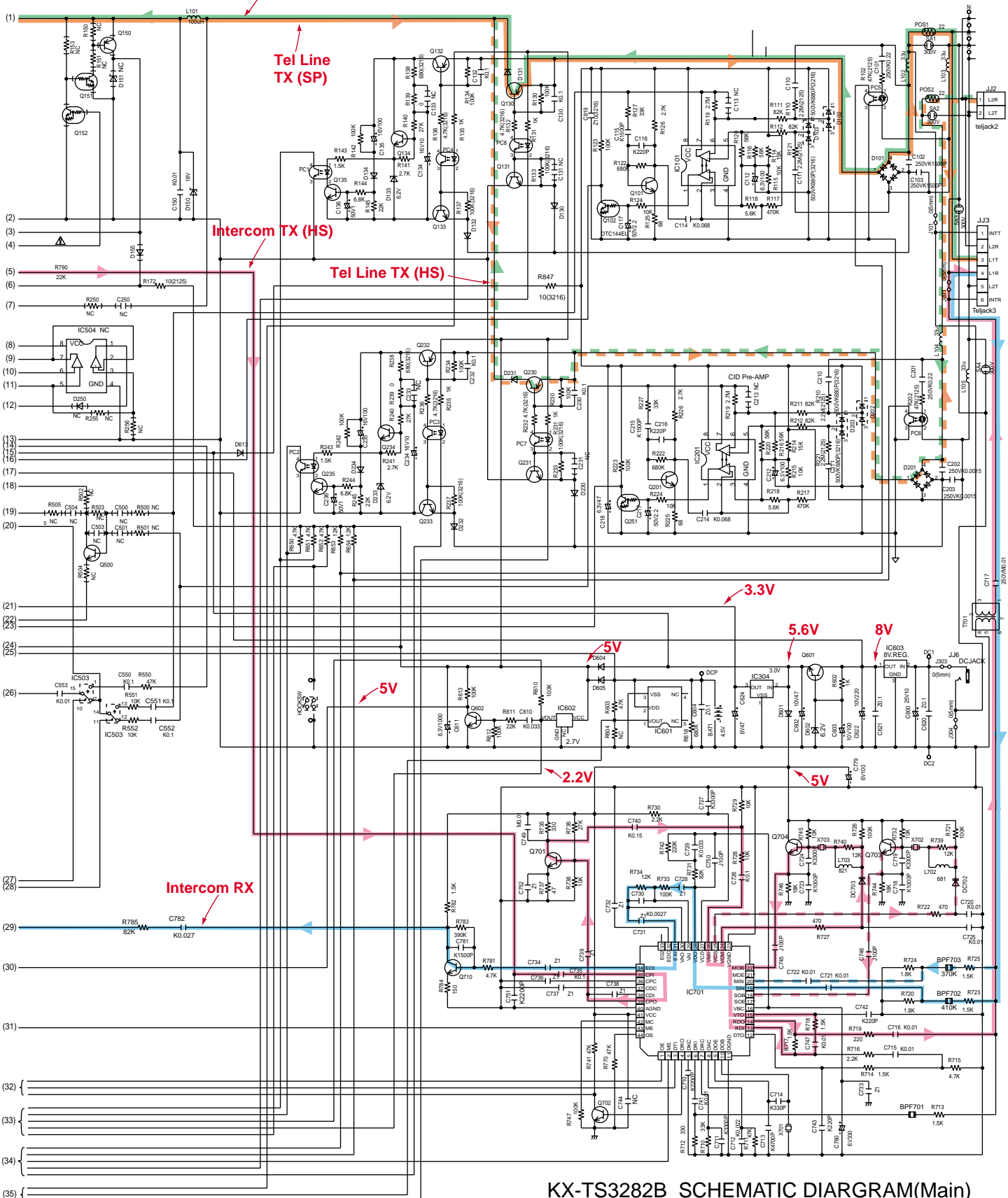
Condition

Loop Simulator : DC48V

Line Current : 40mA

Input SP-Phone : 1kHz,-40dBm/600Ω

Line-Mod : 1kHz,-20dBm/600Ω



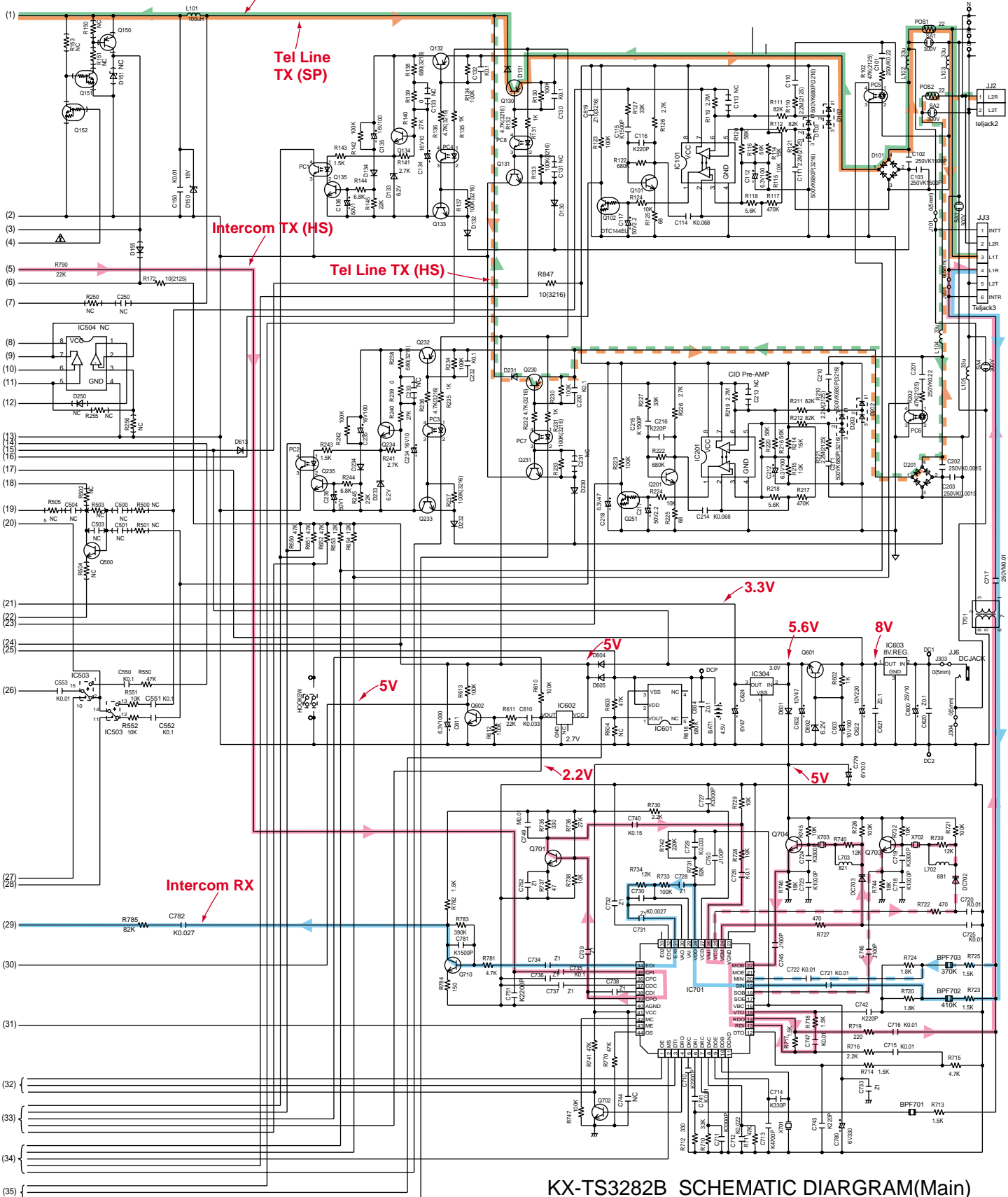
KX-TS3282B SCHEMATIC DIAGRAM(Main)



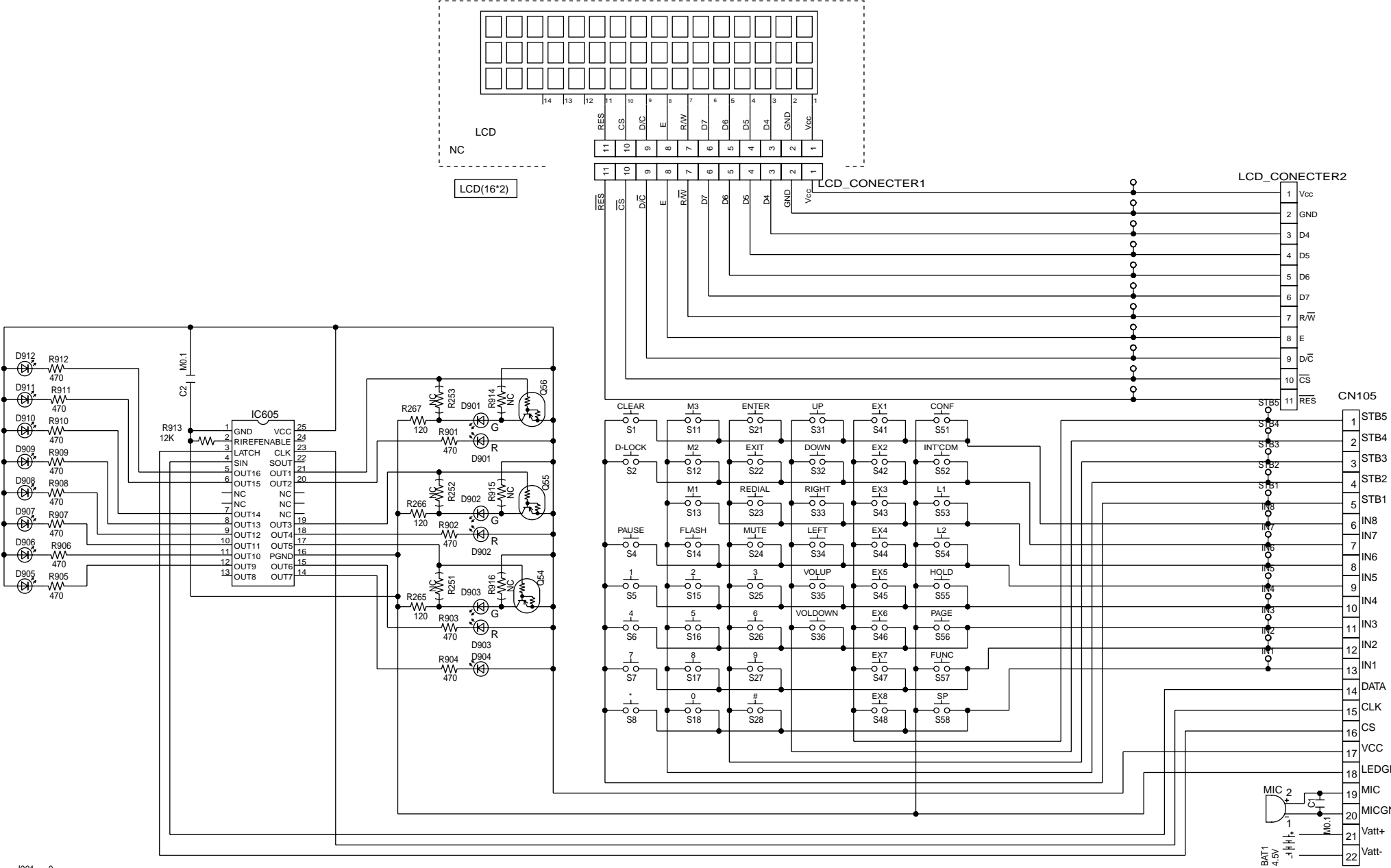
Tel Line RX

Condition

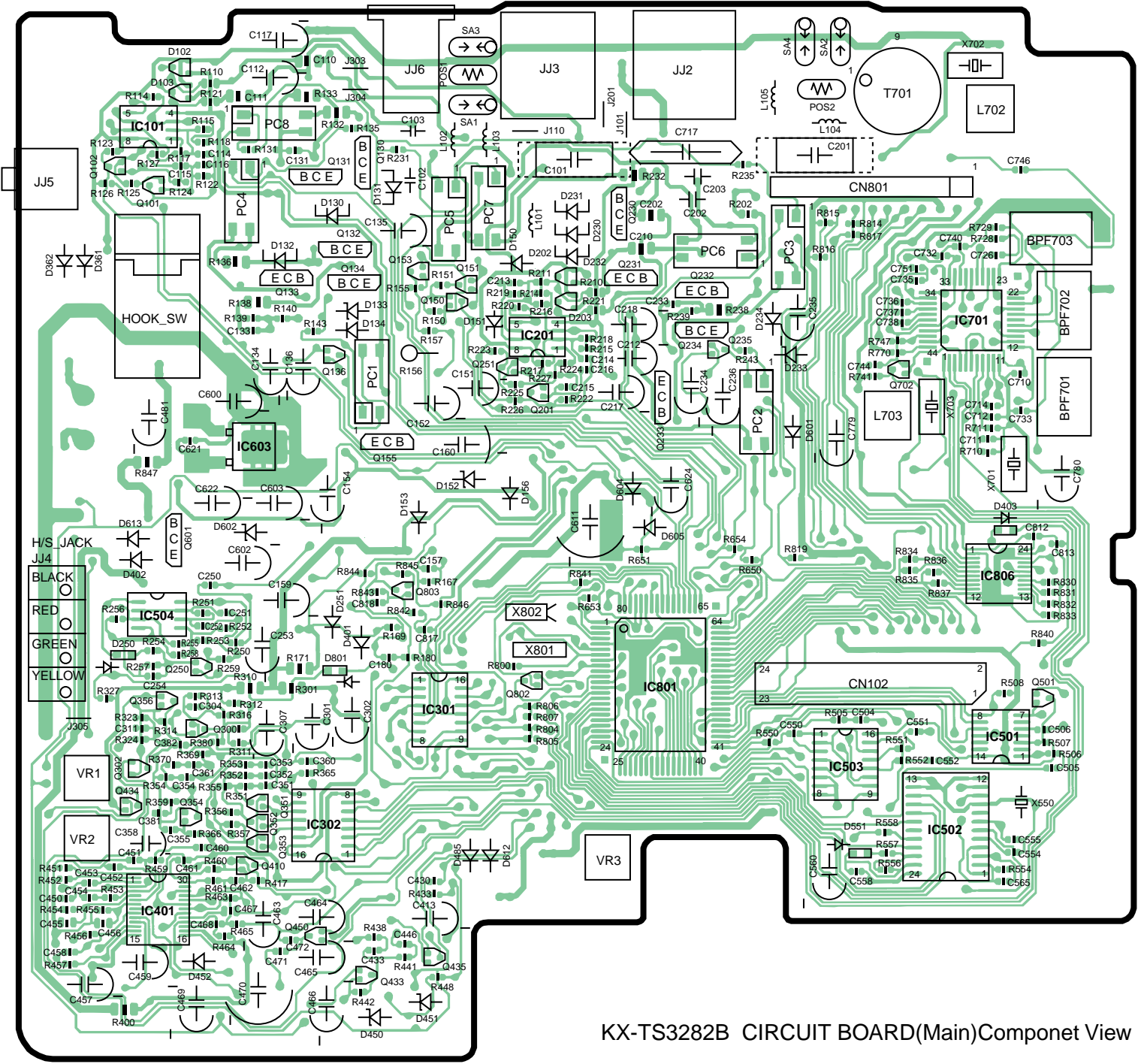
Loop Simulator : DC48V  
Line Current : 40mA  
Input SP-Phone : 1kHz,-40dBm/600Ω  
Line-Mod : 1kHz,-20dBm/600Ω



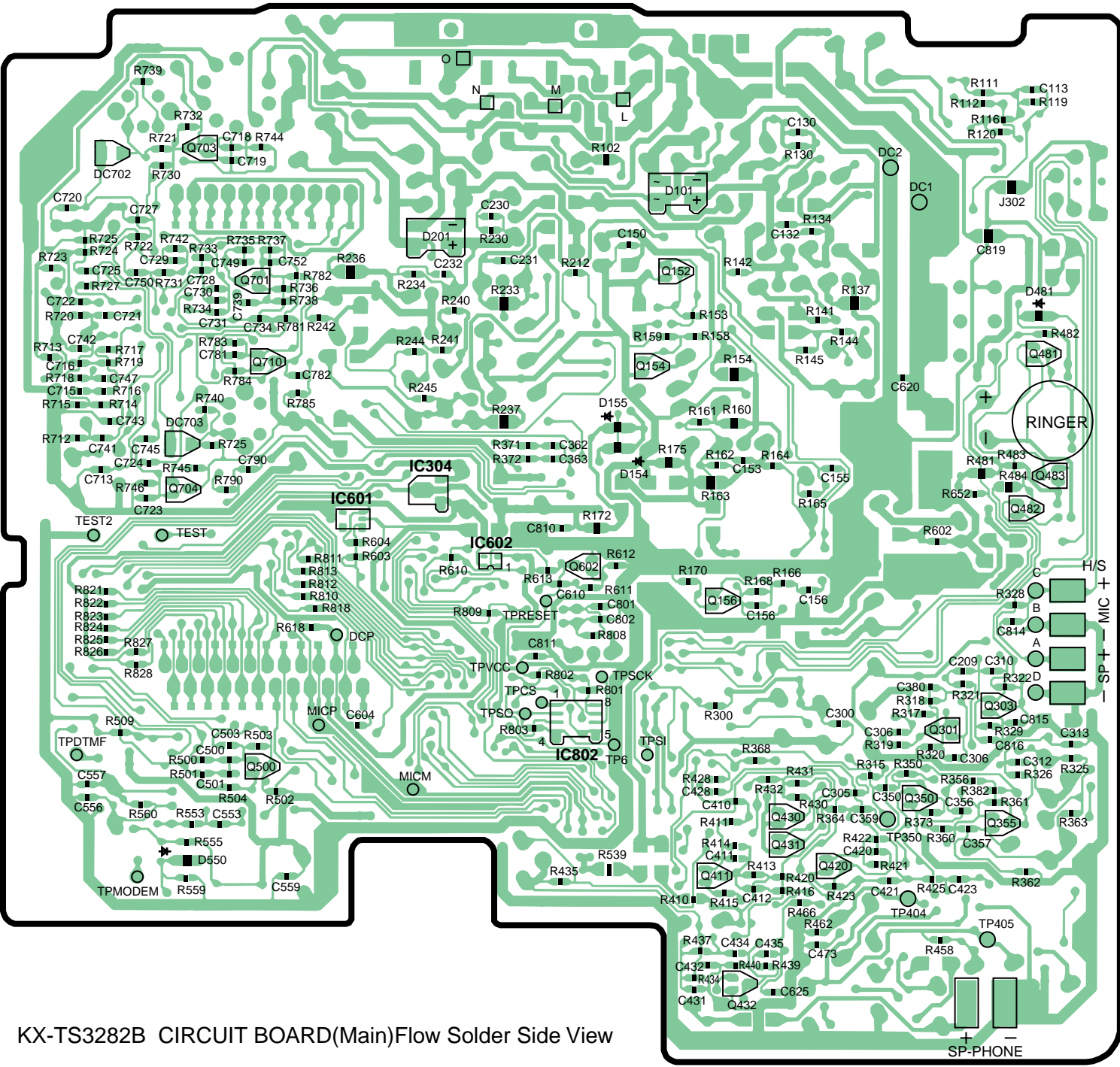
KX-TS3282B SCHEMATIC DIAGRAM(Main)



KX-TS3282B SCHEMATIC DIARGRAM(Operation)



KX-TS3282B CIRCUIT BOARD(Main)Componet View



KX-TS3282B CIRCUIT BOARD(Main)Flow Solder Side View